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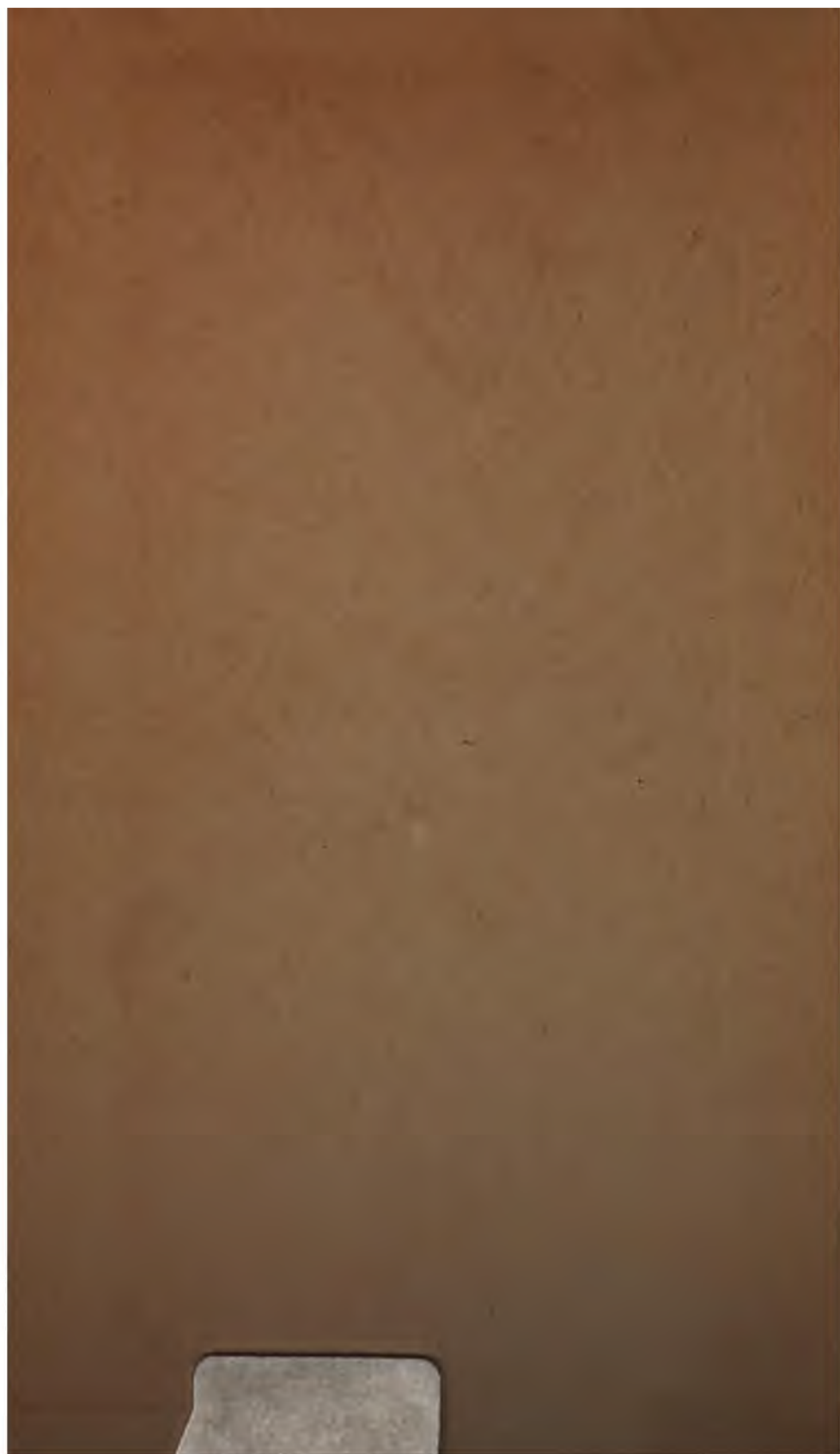
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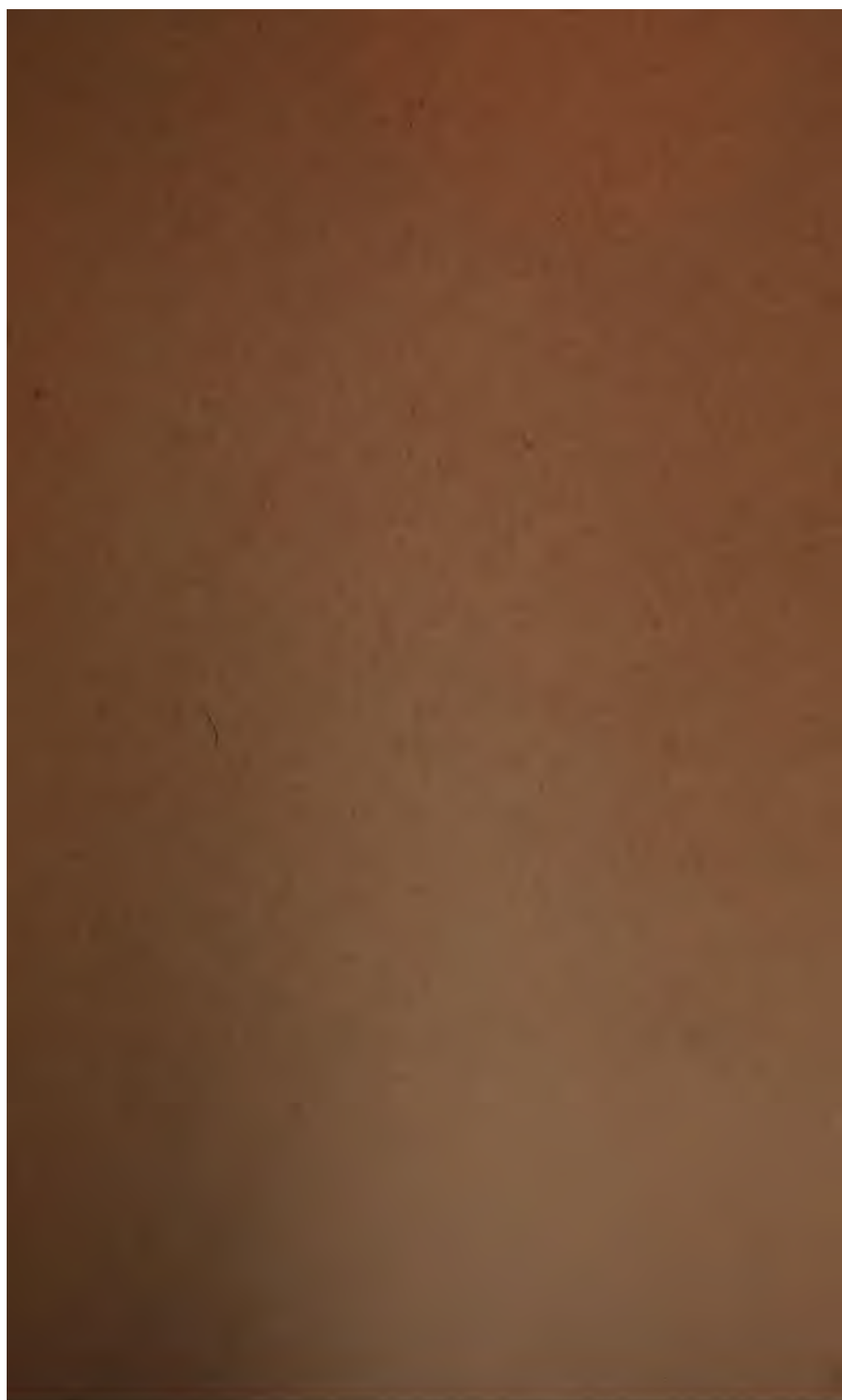
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SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM

Bulletin 90

A MONOGRAPH OF THE MOLLUSCAN FAUNA OF
THE ORTHAULAX PUGNAX ZONE OF THE
OLIGOCENE OF TAMPA, FLORIDA

BY

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Curator, Division of Mollusks, United States National Museum



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The scientific publications of the United States National Museum consist of two series, the *Proceedings* and the *Bulletins*.

The *Proceedings*, the first volume of which was issued in 1878, are intended primarily as a medium for the publication of original, and usually brief, papers based on the collections of the National Museum, presenting newly acquired facts in zoology, geology, and anthropology, including descriptions of new forms of animals and revisions of limited groups. One or two volumes are issued annually and distributed to libraries and scientific organizations. A limited number of copies of each paper, in pamphlet form, is distributed to specialists and others interested in the different subjects as soon as printed. The date of publication is printed on each paper, and these dates are also recorded in the tables of contents of the volume.

The *Bulletins*, the first of which was issued in 1875, consist of a series of separate publications comprising chiefly monographs of large zoological groups and other general systematic treatises (occasionally in several volumes), faunal works, reports of expeditions, and catalogues of type-specimens, special collections, etc. The majority of the volumes are octavos, but a quarto size has been adopted in a few instances in which large plates were regarded as indispensable.

Since 1902 a series of octavo volumes containing papers relating to the botanical collections of the Museum, and known as the *Contributions from the National Herbarium*, has been published as bulletins.

The present work forms No. 90 of the *Bulletin* series.

RICHARD RATHBUN,
Assistant Secretary, Smithsonian Institution,
In charge of the United States National Museum.

WASHINGTON, D. C., November 25, 1914.

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MONOGRAPH OF THE MOLLUSCAN FAUNA OF THE ORTHAULAX PUGNAX ZONE OF THE OLIGOCENE OF TAMPA, FLORIDA.

By WILLIAM HEALEY DALL,

Curator, Division of Mollusks, United States National Museum.

INTRODUCTION.

In the vicinity of Tampa Bay, Florida, and especially on the northwestern shores of the bay, near Ballast Point, are found certain limestones more or less mingled with layers of clay, marl, and chert, with residual sands and so-called "fuller's earth." A particular stratum which crops out near high-water mark at Ballast Point is extremely fossiliferous. In the cherty portions the calcareous matter of the fossils has disappeared through solution, and they are represented chiefly by molds, from which casts may be made with gutta-percha or other plastic material, so that the character of the fossils can be determined. In the marly or clayey parts of this deposit the fossils have also largely disappeared, but natural casts in pure silex have replaced them. In the portions of the bed which retain the character of limestone the fossils remain more or less intact, but are difficult to work out on account of the hard, tough character of the matrix. Rock excavated by dredges in deepening the channel off Ballast Point, much of which has been dumped on the adjacent beaches, is of the same character as the limestone above tide marks in which the fossils remain calcareous. In that portion of the bed in which silicification has been most active, besides the shells exquisitely reproduced in silica, either translucent or of various shades of brown, also occur silicified corals, some of them in masses of considerable size. These have a geodic form in many cases, the exterior of the coral head being reproduced, often with great perfection of detail, while the interior is hollow, with its walls covered with brilliant crystals of quartz, often presenting a remarkable coloration in various shades of brown, red, blue, or yellow. These having attracted the attention of visitors, were for years collected by dealers in local curios for sale to tourists. The layers

from which they came were known to collectors and later to visiting geologists as "the Sillex Beds," a place-name they have retained to the present time.

The process of silicification is still going on. When the writer visited the locality in 1886 and on various subsequent occasions, hoping that the limestone matrix might be removed by acid, a test was made which showed that in cases where part of a fossil shell projecting from a limestone pebble between tides, where the water was gradually dissolving the limestone and exposing the fossil, the still-imbedded portion of the shell retained its limy character, while the exposed portion had been completely replaced by sillex.

The interest which these fossils possess is not limited to their aesthetic beauty, nor their position as characteristic of one horizon in the series illustrating the evolution of life on the globe, but is of extreme importance as furnishing a key to the little-understood succession of the Tertiary beds which fringe the islands of the West Indies and the encircling continental shores of Mexico, Central America, and northern South America. The Tertiary column of the coastal plain of our Gulf States being fairly well elucidated, the relative position of the deposits to the south can be determined, if any one of them can be satisfactorily connected with a given horizon in the North American series. Such a connection is afforded by the fauna of the sillex beds of Tampa.

GEOLOGICAL EXPLORATION OF THE BEDS.

The first account of these beds in geological literature was printed in the American Journal of Science in 1846¹ by Prof. John H. Allen. His account is accurate and graphic, representing the characteristic features of the deposit and its fossils as well as could be done to-day, though without any attempt to determine their place in the geological column. He states that even at that time the chalcedonized fossils were well known to mineralogists. Later in the same year T. A. Conrad published an account of his researches into Floridian geology² made during a visit in 1842. He described the bed and the fossils at length and refers them to the upper part of the Eocene. He traced the formation correctly to the falls of the Hillsborough River, 9 miles above Tampa, and again recognizes it "a few miles up the Manatee River in the bed of a rivulet." He points out that at Ballast point, near Fort Brooke, the beds containing silicified material underlie a stratum of limestone which in turn is covered by a thin layer of Pleistocene marl and shells. In the second part of his paper he describes and figures nine species of invertebrates, including a *Rolanus* and two species of Foraminifera from these beds.

¹ Amer. Journ. Sci., ser. 2, vol. 1, pp. 38-42, Jan., 1846.

² Idem., ser. 2, vol. 1, pp. 41-48, 399-400, July and Nov., 1846.

Somewhat later Ballast Point was visited by Prof. J. W. Bailey, United States Army, who was interested in Foraminifera and published¹ an account in 1850 of material which he supposed to be an infusorial earth from this locality. This has since been determined to be merely a part of the marl, which contains a certain number of diatoms and Foraminifera and not a separate deposit. Thirty-six years later an exploration of southern Florida was suggested by Mr. Joseph Willcox, of Philadelphia, and financed by the Wagner Free Institute of Science and the Academy of Natural Sciences of that city. The party was led by Mr. Willcox and included Prof. Angelo Heilprin and Mr. Charles H. Brock, besides the master and crew of a small sailing vessel on which the trip was made. A hasty visit to Ballast Point enabled Professor Heilprin to make a collection of the silicified fossils and some notes on the geology, which were afterward published in the Transactions of the Wagner Institute² as part of an interesting report on the expedition.

The siliceous bed was referred by Professor Heilprin to the "Middle Atlantic Miocene" and correlated with part of his "Virginian series," in part the "Yorktown epoch" of Dana (pp. 121, 127). He described and figured the new forms and enumerated 47 species from that horizon and pointed out the identity of 6 of them with species collected from the Santo Domingo Tertiary by W. M. Gabb. He pointed out the probable identity of Conrad's *Nummulites floridana* with the European *Orbitolites complanata* of Lamarck, a surmise which has since been agreed to by Doctor Bagg. Curiously enough the layer called the *Cerithium* Rock, by Heilprin, which he thought to be below the horizon of the siliceous beds, but which has since proved to be part of the "Tampa limestone" overlying the siliceous beds,³ he placed as forming the "transition ground" between the Miocene and Oligocene.

The researches of the Wagner expedition having aroused interest, the present writer was directed by the authorities of the United States Geological Survey to proceed to Florida in the winter of 1886-87 to obtain further information.

At the invitation of Mr. Willcox who intended to go over the same ground again we joined forces, and to his familiarity with the region much of the resulting success was due.

The conclusions drawn from the observations made on this trip were published by the writer in the Neocene Correlation Paper⁴ of the survey, together with much collateral information derived from investigations in other parts of Florida. Collections at Ballast Point

¹ Smiths. Contr. Knowl., vol. 2, No. 8, p. 19, 1850.

² Trans. Wagner Inst., vol. 1, pp. 10-11, 105-127, June, 1889.

³ A limestone underlying the siliceous zone is reached by artesian wells, but this was inaccessible to Heilprin and seems by its fauna identical with the siliceous beds.

⁴ U. S. Geol. Survey, Bull. No. 84, 1892, pp. 111-123.

yielded 128 species unknown to science, which were described and figured in the Transactions of the Wagner Institute,¹ together with other Floridian fossils.

In the Neocene volume the information in regard to the relations of the silex beds and associated strata, gathered through five years' investigations in various parts of the peninsula, were correlated and the whole subject reviewed. It was shown that the so-called Miocene of Florida was divisible into two groups separated not only by a marked change in the character of the deposit, but by a surprisingly sharp distinction in the character of the faunas, the essentially sub-tropical fauna of the lower group being replaced in the upper one by a fauna characteristic of much colder water. These two groups were tentatively considered under the terms Older and Newer Miocene, respectively, and the various zones or horizons disposed as in the following table.² The colloquial term "Silex bed" was replaced by the name "Orthaulax bed" from the most characteristic fossil. The superincumbent limestone was named the "Tampa limestone," and the series of beds above the lower part of the Chattahoochee limestone of Langdon and including the Alum Bluff beds³ was associated under the designation of the "Tampa Group."

Table of 1892.

[The horizons are arranged in ascending order from the lower line.]

Cold Water fauna. Newer Miocene.	
Chesapeake Group.	Ecphora bed (Alum Bluff.)
Warm Water fauna. Older Miocene.	
Tampa Group.	Alum Bluff beds. {Sands and clays.
	Tampa beds. {Chert of Hillsboro' River.
	{Tampa limestone.
	? "Infusorial earth."
	White Beach sand rock.
Chipola beds.	Sopchoppy limestone.
	Chipola marls.
	Orthaulax bed.
	? "Cerithium rock" Tampa.
Chattahoochee Group.	Ochoossee beds. {Chattahoochee limestone.
	{Water bearing sands.
	Hawthorne beds. {Phosphatic oolite.
	{Ferruginous gravels.
	{Greenish clays.

A more thorough study of the fauna led to the recognition of the correlation of the above-mentioned "Older Miocene," including the

¹ Trans. Wagner Inst., vol. 3, 1890-1903.

² Bull. U. S. Geol. Survey, No. 84, 1892.

³ Afterwards proved to include the local equivalent of the Oak Grove sands.

Vicksburg Group, with the Oligocene (Aquitanean) of European geologists. This was announced in 1896,¹ and the determination has since been fully confirmed by the vertebrate fossils studied by Osborn and other paleontologists.

With the conclusion of the discussion of the molluscan fossils of the Florida Tertiary in 1903—work to which the explorations of many members of the United States Geological Survey contributed material, especially Capt. Frank Burns—a review of the available evidence was prepared and published in the last fasciculus of that work.² The arrangement of the several zones or horizons as then understood was as follows, in descending order:

1. Oak Grove sands.
2. Chipola marls.
3. Tampa limestone.
4. Orthaulax bed.
5. Chattahoochee Group.
6. Ocala nummulitic limestone.
7. Peninsular limestone.

Taking these in ascending order it may be pointed out that the researches of Col. Thomas L. Casey at Vicksburg, Mississippi,³ confirmed the opinion previously held by those geologists who had explored the typical locality, that the Vicksburg Group as it was called by Conrad (who realized that it was not faunally homogeneous⁴) comprises at least two faunal horizons, the upper a marl containing abundant *Orbitoides* (*Lepidocyclina*), and the lower a limestone in which *Orbitoides* is absent or very rare. He writes (p. 515):

The lower Vicksburgian consists of alternate thin strata of gray sands, sandy clays, and variably, but usually loosely compacted white or gray limestones. The upper consists of a much thinner bed of more or less red brown marl, often indurated into nodular masses, or subindurated and without trace of limestone, having rarely, however, thin layers of glauconitic sands and comminuted shells, in which entire specimens when found are generally much distorted by pressure. The faunas of these two beds differ very markedly, and there are probably not half of the species of either common to the two.⁵

There can be no question that we have here two faunal horizons though the stratigraphy may show no unconformity. There is very little doubt that the particular species supposed by Conrad to be

¹ Proc. U. S. Nat. Mus., vol. 19, No. 1110, p. 303, 1896.

² Trans. Wagner Inst., vol. 3, pp. 1541-1620, 1903.

³ Proc. Acad. Nat. Sci. Phila. for 1901, pp. 513-518.

⁴ Journ. Acad. Nat. Sci. Phila., ser. 2, vol. 1, pp. 207-208, 1849. In this article Conrad indicates four conspicuous species which he states are found only in the lower part of the bluff and not in the upper fossiliferous stratum.

⁵ Unpublished lists of the fossils collected by Dr. T. W. Vaughan, with close attention to the stratigraphy at Vicksburg Bluff, and kindly furnished for use in the present memoir show that there are of 123 well-determined species 38 peculiar to the upper bed, 27 peculiar to the lower bed, and 58 species found in both beds. The fauna described by Conrad in 1848 comprised species from both horizons indiscriminately.

characteristic of his "Group" are not confined to the two horizons represented in it, and can not, therefore, serve as tests of identity or difference of faunal epochs.

The name Peninsular limestone was proposed by the writer in 1903¹ for the Orbitoidal limestone, which forms the mass of the Floridian plateau and in which artesian wells have been sunk through a distance of over 1,500 feet without reaching its lowest limit. The statement is as follows:

The Orbitoidal limestone which forms the mass of the Floridian plateau, and which has been, in this work and in the literature, generally called the "Vicksburg limestone," may really form a different horizon altogether from the typical Vicksburgian and be intermediate between the latter and the Nummulitic Ocala limestone. In order to promote clearness and avoid confusion, it is probably advisable to adopt a distinct name for the Orbitoidal phase or formation for which I would suggest the term Peninsular limestone. This is intended not as a permanent formation name, but as a general term for the fundamental plateau limestone of Florida, in which a close and thorough study in the future may result in the discrimination of more than one horizon or zone.

An examination of all the molluscan fossils in the collection of the United States National Museum which have been obtained by the United States Geological Survey from the Peninsular limestone shows that of 19 species 13 are peculiar to it and 4 are identical with typical Vicksburg species. The limestone, except in its upper portion where it merges into the Ocala or Nummulitic phase, is very poor in fossils, except foraminifera, and only two or three of the molluscan fossils are at all common; practically all of the conspicuous shells of the upper horizon at Vicksburg have dropped out, a few of them to reappear in the Ocala. The foraminifera have not hitherto had the careful study they need, but are now in the hands of Dr. Joseph A. Cushman for that purpose. There are two widely distributed and rather common Echinoids, *Pygorhynchus gouldii* Bouvé, and *Oligopygus haldermani* (Conrad) Twitchell, neither of which has been reported from Vicksburg. Dr. T. W. Vaughan, after extensive explorations between the Mississippi and Savannah Rivers and in northern Florida, is of the opinion that the Peninsular limestone "can not be separated stratigraphically from Vicksburgian limestones to the east and north," and that "no stratigraphic line can be drawn between it and the overlying Ocala limestone." This is very probable, but the distinctions sought to be drawn by the writer are faunal or paleontological, not stratigraphic, since experience has shown that only by their contained faunas can the different and relative ages of these excessively similar successive limestones be finally determined. In the present case the Ocala phase or zone affords 59 species of mollusks, of which 25 are peculiar to it (as far as

¹ Trans. Wagner Inst., vol. 2, p. 1554.

our present knowledge goes), 13 identical with species found at Vicksburg, and 15 (including in this case foraminifera) are inherited from the Peninsular limestone, which was followed by the Ocala with continuous sedimentation but with the changes of fauna above indicated.

The Ocala or Nummulitic limestone of Heilprin was first discovered by Mr. Joseph Willcox and discriminated from the Peninsular limestone, of which it seems to form a culminating phase, by Prof. Angelo Heilprin. The stratum, though thin, is, according to Doctor Vaughan's observations, quite widely spread, and is everywhere characterized by a specially abundant content of foraminifera, particularly the Nummulites and Miliolites. The former are not absolutely confined to the Ocala phase, but elsewhere are relatively rare, indicating perhaps the slowness with which the Nummulitic fauna of southern Europe and northern Africa was able to make its way westward, following the Orbitoides or Lepidocyclinas and Orbitolites. The last mentioned have been able to persist to the present time, having been dredged by the peck in the Gulf of Mexico by the expeditions of the United States Bureau of Fisheries.

The Chattahoochee group, of which the typical locality is at New Chattahoochee Landing near the railway bridge over the river of the same name, was named by Langdon in 1887, who, by misidentification of fossils, was led to describe it as of Miocene age. The fossils are not numerous and as a rule are poorly preserved.

The Orthaulax bed has been sufficiently described above, as has the overlying limestone named in 1892 by the writer, the Tampa limestone, which though apparently conformable with the former has so far failed to yield to collectors some of the most characteristic fossils, such as *Orthaulax* and *Villorita*, and contains numerous others, especially *Cerites*, which have not yet been found in the Orthaulax bed.

The White Beach limestone of Little Sarasota Bay¹ has a fauna in many respects similar to that of the Orthaulax bed, and yet the identifiable species are not sufficiently numerous to decide whether it may be regarded as its exact equivalent or not. The question is complicated by the presence in the White Beach fauna of several large and conspicuous species not known from the Orthaulax bed, especially the *Conus demiurgus*, a large *Cypraea*, a *Mytilus*, and others.

The Tampa limestone (which includes Heilprin's "*Cerithium* rock") lies immediately over the Orthaulax bed at Ballast Point, but owing to its being at or nearly at the surface has been recognized over a wider area.² It is largely free from silex, the fossils are mostly represented by external molds, and it was referred with the Orthaulax bed to the Middle Miocene by Heilprin. The Jack-

¹ Trans. Wagner Inst., vol. 3, p. 1568.

² Idem., p. 1570.

sonboro limestone¹ of Screven County, Georgia, has a number of identical species, among which certain *Cerites* and species of *Strombus* are noticeable. Only one species so far is known to survive into the Chipola marl, though with a better knowledge of the fauna others would doubtless be identified.

The Chipola marls² were first observed in the lower stratum at Alum Bluff, Florida, by Langdon, who supposed them to be Miocene, but richer and better preserved deposits were later discovered by Capt. Frank Burns, of the United States Geological Survey, on the banks of the Chipola River a few miles away. These were later more fully explored by the present writer and Mr. Joseph Stanley Brown, of the survey, and their relation to the other adjacent elements of the Tertiary column of the Gulf coastal plain accurately determined.³ About 50 per cent of the species in the Chipola beds are peculiar to them; of the others the larger proportion are common to the Tampa *Orthaulax* bed, while in the subsequent Oak Grove sands about 24 per cent of the Chipola species survive. A species of *Orthaulax* different from those of Santo Domingo and the Tampa silex beds is found in the Chipola, after which the genus disappears from our Tertiary.

The Oligocene marl of Bowden, Jamaica,⁴ formerly supposed to be Miocene, is naturally more nearly related to the Oligocene of Haiti and Santo Domingo, but contains many Chipola species. It is certain that Gabb's collection from Santo Domingo contains material from more than one horizon. One of the zones, however, must be contemporaneous with the *Orthaulax* bed since the characteristic species occur in both. Part of the rest is doubtless younger and may even prove Pliocene, a confusion which can only be cleared up by further stratigraphical study. The Bowden fauna does not contain *Orthaulax*, though it has many Chipola species, and its relations are probably with the series between the Chipola marls and the Oak Grove sands.

The Oak Grove sands⁵ were discovered at Oak Grove, Santa Rosa County, Florida, by Mr. L. C. Johnson, of the United States Geological Survey, and later explored by Prof. E. A. Smith and Captain Burns. They contain a well preserved and very interesting fauna, which begins to show traces of the influences which formed the subsequent true Miocene. Subsequent explorations by Mr. T. H. Aldrich, and Dr. T. Wayland Vaughan of the United States Geological Survey, have brought to light on Shoal River at no great distance certain fossiliferous marls, which contain an analogous fauna, probably of little difference in age. From Alum Bluff on

¹ Duff and Harris, Bull. U. S. Geol. Survey, No. 84, p. 73, 1892.

² Trans. Wagner Inst., vol. 3, p. 1574.

³ Bull. Geol. Soc. Amer., vol. 5, pp. 147-170, 1894.

⁴ Trans. Wagner Inst., vol. 3, p. 1580.

⁵ Idem., p. 1588.

the Chattahoochee River a stratum visible, but not there fossiliferous, is continuously traceable to Rock Bluff, where it contains characteristic Oak Grove species, so that the position of the latter in the Tertiary column is definitely fixed.

About 24 per cent of the Oak Grove fauna is identical with that of the Chipola marl, but characteristic species like *Orthaulax* have vanished. The sweeping nature of the change caused by the Miocene invasion of cold water is shown by the fact that of the Oak Grove species less than 1 per cent survive in the fauna of the superincumbent Miocene beds.

The premonition of Miocene conditions is shown, however, in the Oak Grove fauna by the appearance of a large *Lyropecten* and some few other analogous species.

After the Miocene a recurrence of warmer conditions brought back in the Pliocene of Florida a good many of the species which had been exiled by the inflow of cold Miocene waters.

The above summary of our knowledge at the time of publication in 1903 indicates the relations of the *Orthaulax* bed to adjacent Tertiary faunas as understood at that period.

The next important attempt to classify the Florida Tertiary beds which are associated with the *Orthaulax* bed is found in the Report on the Geology of Florida with special reference to the Stratigraphy, by George C. Matson and F. C. Clapp.¹ In this report the attempt is made to consider the peninsular part of Florida as an inherent part of the coastal plain and to explain its geological history as dependent on the orogeny of the continental region. In the work of the present writer the present peninsula of Florida is regarded as independent of the Eocene continental border, to which it became attached only after the close of the Miocene, and as related to a group of late Eocene or Oligocene islands separated by a wide strait both from the continent and from Cuba and having its own genetic history, which in Tertiary time only in the very widest and least effective sense depended on the continental movements.

The present writer has shown by railway levels that the peninsular part of Florida is marked by two principal northerly and southerly low ridges with a shallow basin between them; a fact obvious from the distribution of rivers and lakes on any detailed map; and by the location of the fossiliferous strata, that the whole peninsula has a gentle tilt from east to west, thereby causing the encircling deposits about the original islets to dip under the Gulf of Mexico on the western shore of the peninsula. Consequently he feels unable to accept without some evidence the hypothesis that the central basin is an eroded anticlinal arch. Such evidence has not been made public.

While exploring in Florida I learned that wells sunk in the western ridge reached rock only at a depth corresponding roughly with

¹ Florida State Geol. Survey, 2nd Ann. Rept., 1908-9, pp. 25-161, Jan., 1910.

the surface of the lowland limestone at the foot of the ridge; and that water was struck only at a further depth corresponding to the water level in the lowlands. This may indicate that the ridge corresponds rather to dune formation, or residual material left after solution in adjacent low areas, than to any real orogenic fold. While minor folding of a gentle character was observed by me along the banks of the Caloosahatchie River between Lake Okeechobee and the Gulf of Mexico, nothing indicating a major fold corresponding to the western ridge (which reaches in places a height of nearly or quite 200 feet) was detected.

The limestone characterized by a great abundance of *Orbitoides* (*Lepidocyclus*) which is the fundamental rock of peninsular Florida, and which has (p. 6) been shown to be, faunally, measurably distinct from the two horizons at Vicksburg included by Conrad in his Vicksburg Group, as indicated previously was named by me the Peninsular limestone. Messrs. Matson and Clapp considered it desirable to unite certain limestones of western Florida, which they called "Marianna limestone," with the Peninsular limestone which they believed might be newer than the Marianna, with the continuously deposited Nummulitic or Ocala limestone which is believed to be at least the latest faunal phase of the Peninsular limestone; and presumably also with the two typical Vicksburg horizons of Conrad—in one group, which "to avoid further confusion" they proposed to call the Vicksburg Group.

There is no doubt of the relationship faunally of these several strata, but if we combine them into one group without indicating by any subordinate names the individual characteristics of the several zones referred to, it would seem that clearness would rather be lost than gained.

The different points of view outlined above account for the different results arrived at by the respective authors.

The column as devised by Messrs. Matson and Clapp is as follows:

	MIOCENE	
Jacksonville formation.		Choctawhatchee marl.
Unconformity.		
	OLIGOCENE	
	Apalachicola Group.	
	Alum Bluff formation.	
	Chattahoochee formation.	
Believed to be contemporaneous.	Hawthorne formation.	
	Tampa formation.	
Unconformity.		
	Ocala limestone.	
Vicksburg Group.	Peninsular limestone.	
	Marianna limestone.	

The Ocala limestone is described as light gray to white, but the material from Ocala when weathered is of a warm yellow. Probably it differs in different places and with the degree of weathering. It is characterized by its profuse foraminiferal fauna and vertebrate remains.

The "Tampa formation" is believed by Messrs. Matson and Clapp to be "contemporaneous" with the Hawthorne and Chattahoochee formations. Whatever may be the case with the two latter, judged by their type localities which have furnished few fossils, the character of the faunas of the different zones of their Tampa formation precludes contemporaneity in the ordinary sense of the word, and the sedimentation shows that the deposition was serial and not contemporaneous. Doubtless the three so-called "formations" form a group in which the faunas are more nearly related to each other than to the groups above and below, and this general relation is perhaps what the authors intended to express by the term "contemporaneous."

The "Alum Bluff formation" of Messrs. Matson and Clapp, as they state,¹ is a different group from that named the Alum Bluff beds by Dall in 1892. These authors include in it the Chipola marl at the base of the bluff, which faunally is more nearly related to the Tampa Group than to the Oak Grove sands which form paleontologically the characteristic unit of Dall's Alum Bluff beds. The latter were specifically intended to include the strata between the Chipola marl and the Chesapeake (of Dall) or Choctawhatchee Miocene of Matson and Clapp.

The stratum stratigraphically continuous from Alum Bluff (where it bears no fossils) to Rock Bluff, where it contains *Pecten sayanus*, *Turritella alcida*, and one or two other species characteristic of the Oak Grove sands, is the representative in Dall's Alum Bluff beds of the sands referred to. The strata between it and the Chipola marl at the foot of the bluff are probably closely related to the marl, though there are very few recognizable fossils. The Oak Grove sands are faunally contrasted with the Chipola marl by the absence of *Orthaulax* and many other tropical or warm-water forms which occur abundantly in the Chipola fauna, and by the precursors of the Miocene which they contain, such as *Pecten sayanus*. The Oak Grove sands are of course Oligocene and more nearly related by their fauna to the subjacent Oligocene faunas than to anything which succeeds the sands. But in any grouping of the upper Oligocene faunas that of the Oak Grove sands and the Shoal River fauna reported by Vaughan stands contrasted with those which precede them, though not so markedly as with the succeeding Miocene.

It may be advisable, considering the misconceptions which have appeared in the writings of some foreign geologists, to put on record

¹ Florida State Geol. Survey, 2nd Ann. Report, 1908-9, p. 91.

here what has been repeatedly stated before by the writer, but apparently not clearly understood by them.

The Miocene to which reference is made in all my discussions of this subject is the Chesapeake Miocene of America, which has been shown by me¹ to have as a European analogue the Helvetian of northern Europe, Belgium, north Germany, and Denmark rather than the Molasse of Switzerland, the warm-water Miocene of southern France, and the Vienna Basin.

This Chesapeake Miocene has been recognized on the North American continent as far south as Lake Worth and in Key Vaca, Florida, and Galveston, Texas, in all these cases from artesian borings. Farther south than this we have no evidence of its existence. In most cases where exploration has been made, as at Panama and the Tehuantepec Isthmus, faunas determined as Pliocene immediately succeed those of the upper Oligocene, leading to the inference that the land stood higher in the Middle American region during the Miocene than during the periods preceding or following that epoch. Whether the subtropical Mediterranean Miocene has any analogue above the sea in this general region, including the Antilles, is doubtful. If it exists it may possibly be found in the beds of Santo Domingo or Costa Rica, where the problems of the stratigraphical relations of reported fossils still remain to be elucidated.

The Jacksonville formation is agreed to represent the typical Miocene of the Chesapeake Group in eastern Florida. In the western part of the State, where it has been given the name of the Choctawhatchee marl, it contains the same fossils in a better state of preservation.

This summary of the report of Messrs. Matson and Clapp is necessarily so brief as to do scant justice to the large amount of additional detail which it brings to our knowledge and the profuse elucidation of the geology which it contains.

The latest publication bearing on the present monograph which has been considered by the writer is the monumental volume by Dr. Bailey Willis, entitled "Index to the Stratigraphy of North America."² This portion "has been compiled by T. W. Vaughan from the literature and from the unpublished results of G. C. Matson and E. W. Berry in western Florida," etc. The portion relating to the beds immediately adjacent, above or below the Orthaulax zone, is quoted from the second annual report of the Florida Geological Survey by Matson and Clapp, above referred to.

Doctor Vaughan³ adds the following paragraph of general interest:

Sediments of upper Oligocene age extend westward from western Florida to the Mississippi River. The Apalachicola Group or marine upper Oligocene

¹ Maryland Geol. Survey, Miocene, 1904, pp. cxxix-civ.

² U. S. Geological Survey, Professional Paper No. 71, 1912, pp. 731-745.

³ *Idem.*, pp. 744-745.

has been identified by means of fossils in Alabama at Roberts, and probably at Wallace. In wells at Mobile, fossils characteristic of the Alum Bluff formation were encountered between depths of 1,250 and 1,550 feet; below these is limestone correlated with the Chattahoochee formation. The marine upper Oligocene is not known west of Mobile, the sediments becoming estuarine in character as the axis of the Mississippi embayment is approached. The unpublished results of the recent field work of Matson and the parallel paleobotanical studies of Berry have shown that the leaf-bearing clays and sandstones near Chicoria, Wayne County, 5 miles south of Florence, Rankin County, and Raglan, near McCallum, Perry County, Mississippi, are of upper Oligocene age. The exposure at Raglan (the Hattiesburg clays of L. C. Johnson) appears to represent the top of the Alum Bluff of Florida, while the one near Florence is stratigraphically lower, and perhaps belongs to the upper part of the Vicksburg Group. The exposure of interbedded sandstone, semiquartzitic sandstone, and clay at Grand Gulf, Mississippi, is, according to the available evidence, to be referred to the upper part of the lower Oligocene, and is the Mississippi representative of the Catahoula formation of Louisiana at the type locality. These estuarine or fresh-water deposits of clay and sandstone represent the basal portion of the Grand Gulf Group of Hilgard, which, according to his definition, included the sandstone and clays lying between the Vicksburg below and the Lafayette above, but which is now known to be a series of formations, including those of lower and upper Oligocene, Miocene, and Pliocene age, with perhaps some Pleistocene. * * * The detailed tracing of the boundaries between the successive formations is now in progress by G. C. Matson.

Having summarized briefly the more important publications bearing on the subject up to the present time, it remains to sketch the succession indicated by paleontological research as far as it has reached at the time of writing.

It is generally agreed that in the miscellaneous series of clays, marls, sandstones, limestones, cherts, and gravels of which the Florida Tertiary rocks are composed the only safe and definite guide to their time relations as a whole is furnished by their contained fossils. For limited areas the sediments may afford a guide, but, over the region in general, reliance can not be placed on lithologic characters unsupported by paleontological evidence.

About 1890, at a conference called by Major Powell, then Director of the United States Geological Survey, to discuss the meaning and use of the term "formation" in a geological sense, after a long discussion in which each geologist of the survey then present took part, the conclusion arrived at was that a "formation" was "a lithologic unit." However, it may be in older geological epochs, it has long been recognized in Europe that in this sense there are no "formations" in the Tertiary, with very rare exceptions; and that even these exceptions correlated by their faunas form groups which usually are not lithologically identical. The minor divisions are therefore generally designated by some characteristic fossil as "zones" of such and such a species, and faunally related aggregations of such divisions are designated as "beds" or "groups."

To arrive at just conclusions in such divisions it is of course necessary to have a pretty thorough knowledge of the fauna of each zone or horizon; otherwise the really characteristic species of each zone may not be recognized.

The same facts are true of the Tertiary of the coastal plain of the southeastern United States, but hitherto the number of monographic studies of particular faunas has been very small compared with those which still remain to be investigated, and no exhaustive arrangement of our marine Tertiary column can be reasonably expected for many years to come. It was in view of these facts that in the tentative summary of our southeastern marine Tertiary, published in 1898,¹ the writer followed the method approved by the International Geological Congress of 1889 and already adopted by Marsh and other students of American vertebrate paleontology, by referring to the subdivisions as "series," "groups," and "beds" and, as far as possible, avoiding the indefinite and frequently misleading term "formation."

Some progress has been made since that time, and the European method is beginning to be appreciated, though delayed by the paucity of workers in the field of Tertiary invertebrate paleontology, and the consequent insufficiency of our knowledge of the greater number of our invertebrate Tertiary faunas.

The fauna represented in the silex beds at Ballast Point, Tampa Bay, Florida, which is the subject of this monograph, contains two species of the remarkable genus *Orthaulax* Gabb; one of these is rare and was the type of the genus, named by Gabb *O. inornata*, from Santo Domingo specimens. The other, more abundant, is the *O. pugnaz* of Heilprin. The genus first appears, so far as now known, in this horizon, and both species are reported from the White Beach limestone, Little Sarasota Bay, Florida; at least one or both have been obtained from the lower part of the Oligocene beds in the Canal Zone, Panama, and from the West Indian islands of Antigua and Anguilla; while the genus was recognized by Dr. T. W. Vaughan at Consolazion del Sur, Pinar del Rio, Cuba, and at Original Pond, Thomas County, Georgia. The writer also obtained *O. pugnaz* at Bainbridge, Georgia, as did also Doctor Vaughan.

The importance of these fossils in linking the Oligocene of the West Indian, Isthmian, and Caribbean with that of the continent is obvious. I have therefore designated the zone so represented as the *Orthaulax pugnaz* zone, with the typical locality at Ballast Point, Tampa Bay, Florida, the only locality where the fauna has been exhaustively studied.

It is somewhat remarkable that *Orbitolites floridana* is excessively rare in this zone, while extremely abundant in the zone above.

¹ Eighteenth Ann. Rept. U. S. Geol. Survey, pp. 323-348.

This genus of Foraminifera appears to replace *Lepidocyclina* (better known as *Orbitoides* in this country) in these two horizons.

The molluscan fauna of the limestone immediately above the silex beds has not been thoroughly studied, but it is notable for the number of *Cerites* contained in it and for the profusion of *Orbitolites floridanus* Conrad (? *complanatus* Lamarck), and it seems allowable to apply the name of the latter species as a designation of this zone, with the type-locality at Ballast Point.

The fauna represented in the lower bed at Alum Bluff, on the Chattahoochee River, Florida, and in the Chipola marl has been fully though not exhaustively treated in the writer's work on the Tertiary Fauna of Florida.¹ It is a remarkably rich and beautifully preserved fauna, containing one species of *Orthaulax* (*O. gabbi* Dall), the last representative of the genus in our Tertiary. It is also notable for the abundance of a bivalve, *Cardium cestum* Dall, the name of which I have selected to designate the zone typified by the fauna of the Chipola marl at the locality on the Chipola River near Bailey's Ferry, Calhoun County, Florida.

These three zones form a natural faunal group, characterized by a large proportion of common species, by indications of uniform climatic conditions bordering on the tropical, and by the presence of peculiar genera not existing in the faunas succeeding to them.

The next superior zone, of which the fauna is fairly well known, though in part unpublished, is that referred to by the writer in 1892, as represented by the Alum Bluff beds and the sands at Oak Grove, Santa Rosa County, Florida. This horizon is conspicuously distinguished by the greenish or grayish color of the matrix as compared with the yellow or orange of the zone below, by the disappearance of *Orthaulax* and many of the more distinctively tropical forms from the fauna (though a fair proportion of Chipola forms still remain), and by the appearance in the fauna of a certain number of types prefiguring the cold-water fauna which accompanied the deposition of subsequent beds of Miocene age.

The type-locality is at Alum Bluff where the strata lie above the marl of the Chipola type at the base of the bluff, and contain few if any fossils, while the Miocene lies directly above them. But the horizon was traced continuously to Rock Bluff by the writer and Mr. J. Stanley Brown of the United States Geological Survey in 1893.

At Rock Bluff it contains characteristic littoral species which connect the fauna unmistakably with that of the Oak Grove sands which contains a large number of well-preserved species belonging in deeper water. One of the most characteristic of these, *Scapharca dodona* Dall, is present in large numbers and may be used to designate the zone.

¹ Trans. Wagner Inst., vol. 3, 1890-1903.

Doctor Vaughan has gathered data at several other localities indicating the presence of a fauna allied to or perhaps identical in some cases with that found at Oak Grove; a notable instance is the outcrop at Shoal River, Florida.

As a group (which may later be enlarged) these faunas should be separated from those included with the *Orthaulax* zone, in the writer's opinion, for the reasons above given. It is entirely possible, and more or less probable, that with such intensive study as has been given to the Tertiary of the Paris basin in France, numerous other faunas or subfaunas may eventually be given a place in the column of the Florida Tertiary, but with such a vast field, so few workers, and the topographic difficulties presented by most of the region, progress must necessarily be slow.

The following list presents in descending order the names of the zones as now indicated with the designations used by the writer in United States Geological Survey Bulletin 84, 1892, page 157.

Zone of—	Designations of 1892.
<i>Scapharca dodona</i>	Alum Bluff beds.
<i>Cardium cestum</i>	Chipola marl.
<i>Orbitolites floridanus</i>	Tampa limestone.
<i>Orthaulax pugnax</i>	Orthaulax bed.

RELATIONS OF THE FAUNA OF THE ORTHAULAX PUGNAX ZONE.

The number of species and varieties of mollusks now known from the zone is 312. Of these nearly two-thirds are peculiar to the zone and have chiefly been obtained from the silicious layer. Of the total molluscan fauna 219 species were new to science when first explored by the United States Geological Survey, and 95 of these are described in this monograph. Of the previously known species 15 were named by Conrad and 29 by Heilprin, while 36 were first described from other horizons by various writers. There are 9 species distinct from the others but represented by specimens too imperfect to serve as the basis of descriptions.

Of the species enumerated one seems undistinguishable from a form of the same genus (*Xenophora*) which occurs in the upper Cretaceous (Ripley horizon) of the Gulf States and appears to survive into the recent fauna of the West Indies.

Four species go back as far as the Claiborne Sands, 6 are found in the Jackson Eocene, and 7 in the Vicksburg. Eight come up from the *Lepidocyclus* zone, 4 have been recognized in the scanty fauna known from the Nummulitic zone, and one or two from the very imperfectly explored Chattahoochee fauna. Eight are known from the Tertiary of Santo Domingo, several of which are very characteristic of the zone. The two characteristic species of *Orthaulax*

occur in the lower Oligocene of the Panama Canal Zone, and at least one of them has been obtained in Santo Domingo, Antigua, and Anguilla.

Above the *Orthaulax* zone we find 51 of its species surviving in the *Cardium cestum* zone, but only 14 reach the zone of *Scapharca dedona*.

Fifteen occur in extra-Floridian Miocene beds, but only 3 in the Floridian Miocene; 11 are found in the Pliocene of south Florida, 5 in the Florida Pleistocene, while 23 survive in the recent fauna.

SOURCES OF MATERIAL.

Specimens were long distributed by tourists as curios. The first material which was available for this monograph was that collected by Professor Heilprin in 1888. In the following year the present writer made a large collection, and subsequently the locality was visited by Capt. Frank Burns for the same purpose. Mr. Joseph Willcox, Mr. James Shepard and Miss Shepard, Mr. F. W. Crosby, and Mr. W. O. Crosby kindly contributed valuable specimens. Mr. E. J. Post, of Tampa, has made a practice of collecting at Ballast Point for a long time. An excellent series was purchased from him, and he most kindly allowed the study of the material he had on hand at a later time to make the present paper more complete. Some specimens were also contributed by Mr. L. G. Newman and Mr. La Penotière.

ACKNOWLEDGMENTS.

The present writer desires to express his obligations to many members of the United States Geological Survey for unpublished material and notes on the geology, especially to Dr. T. Wayland Vaughan and Mr. George C. Matson, whose contributions have been of great importance.

The Director of the Survey has kindly permitted the use of the drawings made by Survey artists.

To Mr. Joseph Willcox and the Wagner Free Institute of Science, Philadelphia, thanks are due for assistance on numerous occasions and especially for permission to use here some of the figures drawn by J. C. McConnell to illustrate the third volume of the Transactions of the Institute. To the Academy of Natural Sciences we owe the opportunity of consulting the types of species described by Professor Heilprin and W. M. Gabb.

To several kind correspondents in Florida, especially Mr. E. J. Post, are due thanks for specimens lent for examination or contributed to the National collection.

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Dr. T. Wayland Vaughan has kindly consented to give the following brief list of the corals of the Orthaulax zone, identified by him, the report on which is now awaiting publication.

LIST OF SPECIES.

Corals from the "silex bed" of the Tampa formation.

By DR. T. WAYLAND VAUGHAN.

- Antillia? willcoxi* (Dana).
Stylophora silicensis Vaughan.*
Galaxea exelsa Vaughan.
Orbicella cellulosa (Duncan).*
 cavernosa var. *tampaensis* Vaughan.*
 cavernosa var. *silicensis* Vaughan.*
Cyphastrea tampa Vaughan.*
Macandra tampaensis Vaughan.
Syzygophyllia? tampa Vaughan.
Siderastrea silicensis Vaughan* (at Tampa brickyard).
Endopachys tampa Vaughan.
Acropora tampaensis Vaughan.
Goniopora tampaensis Vaughan.
 ballistensis Vaughan.
 matsoni Vaughan.
Porites willcoxi Vaughan.
Alveopora tampa Vaughan.

The species marked * are widely distributed in the Chattahoochee formation of southern Georgia and northern Florida.

Molluscan Fauna of the silex beds.¹

MOLLUSCA.

LAND AND FRESHWATER SPECIES.

- | | |
|--|---|
| <i>Cepolis (Plagioptycha) latebrosa</i> Dall. | <i>Bulimulus (Hyperaulax) americanus</i>
var. <i>lewis</i> Dall. |
| <i>Cepolis (Plagioptycha) instrumosa</i>
Dall. | * <i>Bulimulus (Hyperaulax) tampa</i>
Dall. ² |
| <i>Cepolis (Plagioptycha) direpta</i> Dall. | * <i>Bulimulus (Hyperaulax) ballistae</i>
Dall. |
| <i>Pleurodonte haruspica</i> Dall. | <i>Bulimulus (Hyperaulax) steurnsii</i>
Dall. |
| <i>Pleurodonte crusta</i> Dall. | * <i>Bulimulus (Hyperaulax) tortilla</i>
Dall. |
| <i>Pleurodonte cunctator</i> Dall. | * <i>Bulimulus (Hyperaulax) remolina</i>
Dall. |
| <i>Polygyra adamsi</i> Dall. | <i>Cerion (Eostrophia) anodonta</i> Dall. |
| <i>Bulimulus (Hyperaulax) floridanus</i>
Conrad. | <i>Cerion (Eostrophia) anodonta</i> var.
<i>floridanum</i> Dall. |
| <i>Bulimulus (Hyperaulax) heilprinianus</i>
Dall. | * <i>Microcerion floridanum</i> Dall. |
| <i>Bulimulus (Hyperaulax) americanus</i>
Heilprin. | * <i>Pupoides pilabryi</i> Dall. |
| <i>Bulimulus (Hyperaulax) americanus</i>
var. <i>partulinus</i> Dall. | <i>Urocoptis floridana</i> Dall. |
| | * <i>Planorbis tampaensis</i> Dall. |

¹ Those preceded by an asterisk (*) are new species.

Planorbis (Torquis) *willcoxi* Dall.

* *Planorbis* (Torquis) *elusus* Dall.

* *Spiraxis* *tampae* Dall.

MARINE GASTROPODS.

* *Acteon* *tampae* Dall.

Acteocina *icetherillii* Lea.

* *Acteocina* *squarrosa* Dall.

Retusa *vaginata* Dall.

Scaphander *primus* Aldrich.

Bullaria *petrosa* Conrad.

* *Bullaria* (*Hamina*?) *sulcobasis* Dall.

Terebra (*Oxymoris*) *dislocata* Dall.

Terebra (*Oxymoris*) *tantula* Conrad.

Conus *planiceps* Hellprin.

* *Conus* *illiolus* Dall.

* *Conus* *designatus* Dall.

* *Turris* *albida* Perry.

Turris *cibex* Dall.

Turris (*Surcula*) *sercata* Conrad.

* *Drillia* *condominia* Dall.

Drillia *lapenotieri* Dall.

* *Drillia* *severina* Dall.

Drillia *ostrearum* Stearns.

* *Drillia* *sella* Dall.

* *Drillia* *eupora* Dall.

* *Drillia* *belothea* Dall.

* *Drillia* *spica* Dall.

* *Drillia* *tecla* Dall.

* *Drillia* *smilia* Dall.

* *Drillia* *eupatoria* Dall.

* *Drillia* *tama* Dall.

* *Drillia* *glyphostoma* Dall.

* *Drillia* (*Cymatosyrinx*) *silfa* Dall.

Drillia (*Cymatosyrinx*) *newmani* Dall.

* *Mangilia* *illioi* Dall.

Mangilia sp. indet.

* *Cancellaria* (*Bivetopsia*) *subthomasia* Dall.

* *Cancellaria* (*Bivetopsia*) *depressa* Dall.

Cancellaria (*Sveltia*) sp. indet.

* *Olivella* *posti* Dall.

Olivella *lata* Dall.

* *Olivella* *eutorta* Dall.

* *Olivella* *colleta* Dall.

Ancilla *shepardi* Dall.

* *Marginella* *mollitor* Dall.

* *Marginella* *infesta* Dall.

Marginella *bellula* Dall.

Marginella *inepta* Dall.

Marginella *elegantula* Dall.

Marginella *ballista* Dall.

Marginella *tampae* Dall.

Marginella *limatula* Conrad.

* *Marginella* *gregaria* Dall.

Marginella *bella* Conrad.

* *Marginella* *impagina* Dall.

* *Marginella* *posti* Dall.

* *Marginella* *intensa* Dall.

* *Marginella* *myrina* Dall.

Marginella *newmani* Dall.

Lyria *pulchella* Sowerby.

Lyria *heilprini* Dall.

Lyria *musicina* Hellprin.

* *Lyria* *silicata* Dall.

Mitra *silicata* Dall.

* *Mitra* *syra* Dall.

* *Mitra* *myra* Dall.

* *Strigatella* *americana* Dall.

Conomitra *staminea* Conrad.

Xancus *polygonatus* Hellprin.

Vasum *subcapitellum* Hellprin.

Vasum *engonatum* Dall.

* *Pasciolaria* *petrosa* Dall.

Latirus *floridanus* Hellprin.

Latirus *multilineatus* Dall.

Latirus *rugatus* Dall.

Latirus *callimorphus* Dall.

Fusinus *ballista* Dall.

Fusinus *quincuspinnus* Dall.

Fusinus *newilis* Dall.

Busycon *tampae* Dall.

Busycon *spiniger* var. *nodulatum* Conrad.

Busycon *spiniger* var. *perizonatum* Dall.

Busycon *stellatum* Dall.

Melongena *sculpturata* Dall.

Melongena *sculpturata* var. *turricula* Dall.

Solenosteira *inornata* Dall.

Cantharus *pauper* Dall.

Phos sp. indet.

Phos sp. indet.

* *Alectrion* *ursula* Dall.

* *Alectrion* *ethelinda* Dall.

* *Alectrion* *gardnerae* Dall.

* *Anachis* *eutheria* Dall.

Astyris *turgidula* Dall.

* *Astyris* *cluthera* Dall.

* *Astyris* *dicaria* Dall.

* *Astyris* *acanthodes* Dall.

Murex *mississippiensis* Conrad.

Murex *chipolanus* Dall.

- * *Murex serangula* Dall.
Murex trophoniformis Heilprin.
Chicoreus larvæcosta Heilprin.
Chicoreus crispangula Heilprin.
Chicoreus burnsi Whitfield.
Purpura (*Pteropurpura*) *postii* Dall.
Muricidea heilprini Cossmann.
Muricidea sp. indet.
 * *Trifonalia scabrosa* Dall.
 * *Typhis siphonifera* Dall.
Coralliophila magna Dall.
Rapana tampaensis Dall.
 * *Rapana biconica* Dall.
Melanelia conoidea Kurtz and Stimpson.
 * *Eulima bowdichi* Dall.
Pyramidella (*Longchacus*) *crenulata* Holmes.
 * *Turbonilla* (*Ptycheulima*) *ethellina* Dall.
Odostomia impressa Say.
Cypræa tumulus Heilprin.
Cypræa heilprini Dall.
 * *Cypræa ballista* Dall.
Morum domingense Sowerby.
Orthaulax inornatus Gabb.
Orthaulax pugnar Heilprin.
Strombus chipolanus Dall.
 * *Strombus liocycclus* Dall.
 * *Bittium priscum* Dall.
 * *Bittium* (*priscum* var.?) *sora* Dall.
 * *Bittium adela* Dall.
Cerithium georgianum Lyell and Sowerby.
Cerithium præcursor Heilprin.
Cerithium sp. indet.
 * *Cerithium plectrum* Dall.
Potamides hillsboroensis Heilprin.
Potamides (*Lampanella*) *transecta* Dall.
Potamides (*Pyrazisinus*) *campanulatus* Heilprin.
Potamides (*Pyrazisinus*) *cornutus* Heilprin.
Potamides (*Pyrazisinus*) *acutus* Dall.
 * *Cerithiopsis silicata* Dall.
Trichotropis (*Cerithioderma*) *prima* Conrad.
Modulus turbinatus Heilprin.
 * *Lacuna præcursor* Dall.
Cæcum solitarium O. Meyer.
Serpulorbis grunifera Say.
- Serpulorbis ballistæ* Dall.
Serpulorbis decussata Gmelin.
Petalconchus varians Orbigny.
Petalconchus sp. indet.
Vermicularia (*Anguinella*) *virginica* Conrad.
Siliquaria vitis Conrad.
Turritella tampa Heilprin.
Turritella tampa var. *tripartita* Dall.
 * *Turritella tampa* var. *medioconstricta* Dall.
Turritella tampa var. *pagodaformis* Heilprin.
Turritella megalobasis Dall.
Turritella chipolana Dall.
 * *Turritella systoliata* Dall.
 * *Turritella litharia* Dall.
 * *Turritella atacta* Dall.
Lioplax floridana Dall.
 * *Assiminea aldra* Dall.
 * *Rissoina supralacvigata* Dall.
 * *Amnicola adesta* Dall.
Amnicola sp.
Crucibulum constrictum Conrad.
Calyptrea trochiformis Lamarck.
Hipponix pygmaeus Lea.
Hipponix willcoxi Dall.
Xenophora conchyliophora Born.
Natica (*Cryptonatica*) *floridana* Dall.
Polinices (*Euspira*) *hemicryptus* Gabb.
Ampullina streptostoma Heilprin.
Ampullina amphora Heilprin.
Ampullina solidula Dall.
Amauropsis floridana Dall.
Sinum chipolanum Dall.
 * *Sinum imperforatum* Dall.
Turbo (*Senectus*) *crenorugatus* Heilprin.
Astraea (*Lithopoma*) sp. indet.
Tegula (*Omphalus*) *exoleta* Conrad.
Calliostoma metrium Dall.
 * *Calliostoma tamicum* Dall.
Margarites tampaensis Dall.
Liotia (*Arene*) *solaridella* Heilprin.
Liotia (*Arene*) *coronata* Dall.
Helicina ballista Dall.
Helicina ballista var. *tampa* Dall.
 * *Helicina posti* Dall.
Nerita tampaensis Dall.
Fissuridea chipolana Dall.
Fissurella (*Cremides*) *ceryx* Dall.
Ischnochiton tampaensis Dall.

PELECYPODA.

- * Nucula tampa* Dall.
Leda flexuosa Hellprin.
** Leda postli* Dall.
Foldia frater Dall.
Arca umbonata Lamarck.
** Arca grammatodonta* Dall.
Arca paratina Dall.
Barbatia (Calloarca) marylandica Conrad.
Barbatia (Calloarca) irregularis Dall.
Barbatia (Calloarca) arcuata Hellprin.
Barbatia (Acar) reticulata Gmelin.
Barbatia (Fossularca) adamsi E. A. Smith.
Scapharca hypomela Dall.
Scapharca latidentata Dall.
** Glycymeris lampi* Dall.
Ostrea sellaeformis var. *rugifera* Dall.
Ostrea mauriciensis Gabb?
** Ostrea vaughani* Dall.
Pecten (Aequipecten) chipolanus Dall.
Spondylus bostrychites Guppy.
Spondylus chipolanus Dall.
Plicatula densata Conrad.
Anomia microgrammata Dall.
Modiolus silicatus Dall.
** Modiolus blandus* Dall.
Modiolus (Brachydontes) grammatus Dall.
** Modiolus (Brachydontes) grammatus* var. *cutulus* Dall.
** Modiolus (Gregariella) minimus* Dall.
Modiolus (Gregariella) sp.
Modiolus (Botula) cinnamomeus Lamarck.
Lithophaga antillarum Orbigny.
Lithophaga nigra Orbigny.
Lithophaga nuda Dall.
Lithophaga (Myoforceps) aristata Dillwyn.
Lithophaga (Diberus) bisulcata Orbigny.
Coralliophaga elegantula Dall.
Crassatellites (Scambula) deformis Hellprin.
Venericardia serricosta Hellprin.
Venericardia himera Dall.
Cardita (Carditamera) tegea Dall.
** Cardita (Glans) shepardii* Dall.
Cyrena pompholyx Dall.
- Villorita floridana* Dall.
Chama chipolana Dall.
Chama tampaensis Dall.
** Codakia (Jagonia) scurra* Dall.
Codakia (Jagonia) sp. indet.
Myrtaca (Eulopia) vermiculata Dall.
Phacoides domingensis Dall.
Phacoides (Here) wacissanus Dall.
** Phacoides (Bellucina) tampaensis* Dall.
Phacoides (Cavilucina) recurrens Dall.
Phacoides (Luciniscia) calhounensis Dall.
Phacoides (Luciniscia) plesiolophus Dall.
Phacoides (Miltha) hillsboroensis Hellprin.
Phacoides (Miltha) heracleus Dall.
Diplodonta alta Dall.
** Diplodonta catopotium* Dall.
Diplodonta (Phlyctiderma) puncturella Dall.
** Erycina indecisa* Dall.
** Bornia tampa* Dall.
Cardium (Trachycardium) delphicum Dall.
Cardium (Trachycardium) propeccillare Dall.
Cardium (Trachycardium) bowdenense Dall.
Cardium (Trachycardium) parile Dall.
Cardium (Trachycardium) sp. indet.
Cardium (Cerastoderma) phlyctæna Dall.
Cardium (Cerastoderma) taphrium Dall.
Cardium (Trigoniocardia) alicula Dall.
** Cardium (Trigoniocardia) berberum* Dall.
Dosinia (Dosinidia) chipolana Dall.
Macrocallista (Paradione) acuminata Dall.
Callocardia (Agriopoma) sincera Dall.
** Callocardia (Agriopoma) nux* Dall.
Antigona tarquinia Dall.
Antigona (Artena) shepardii Dall.
Antigona glyptoconcha Dall.
Chione (Lirophora) ballista Dall.
Chione (Chamelea) nuciformis Hellprin.
Chione (Chamelea) spada Dall.

Chione (Chamelea) rhodia Dall.

Anomalocardia floridana Conrad.

Venus halidona Dall.

Tellina segregata Dall.

Tellina chipolana Dall.

* *Tellina dira* Dall.

Tellina (Macaliopsis) merula Dall.

Tellina (Merisca) halidona Dall.

* *Tellina (Angulus) atossa* Dall.

Macoma irma Dall.

* *Semele sardonica* Dall.

Semele silicata Dall.

Corbula (Cuneocorbula) burnsi Dall.

Corbula (Cuneocorbula) sarda Dall.

* *Corbula (Cuneocorbula) kaghriana* Dall.

Panope whitfieldi Dall.

Gastrochana rotunda Dall.

FORAMINIFERA.

Orbitolites floridanus Conrad.

SYSTEMATIC ARRANGEMENT.

GASTROPODA.

Order PULMONATA.

Family HELICIDAE.

Tribe BELOGONA.

Genus CEPOLIS Montfort.

Cepolis MONTFORT, *Conch. Syst.*, vol. 2, p. 150, 1810. Type, *Helix cepa* Muller (Haiti).

Subgenus PLAGIOPTYCHA Pfeiffer.

Plagioptycha PFEIFFER, *Mal. Blatt.*, 1856, p. 135.—MARTENS in Albers, *Die Heliceen*, ed. 2, p. 145, 1860. Type, *Helix lorodon* Pfeiffer (Bahamas).

Plagioptycha PILSBRY, *Man. Conch.*, vol. 9, p. 185, 1894.

Doctor Pilsbry considers this group as nearest to the ancestral forms from which the modern subdivisions of the genus have arisen.

In Oligocene times (formerly referred to as Miocene or Old Miocene) this group was abundantly represented on the group of islands which represented the nucleus of the present Floridian peninsula. It apparently became extinct in Florida with the lowered temperature of the Miocene epoch, though still represented farther south in the Bahamas, Cuba, and Haiti by an abundance of recent species.

CEPOLIS (PLAGIOPTYCHA) LATEBROSA Dall.

Plate 2, figs. 13, 17, 19.

Helix (Jeanneretia) latebrosa DALL, *Trans. Wagner Inst.*, vol. 3, pt. 1, p. 8, pl. 1, figs. 8, 8a, Aug., 1890.

Tampa silex beds, Dall and Post. Only a single specimen was obtained. U. S. Nat. Mus. No. 111944.

CEPOLIS (PLAGIOPTYCHA) INSTRUMOSA Dall.

Plate 2, figs. 6, 15.

Helix (Jeanneretia) instrumosa DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 9, pl. 1, figs. 7, 8d, Aug., 1890.

Tampa silex beds, collected by Dall. U. S. Nat. Mus. No. 111945.

CEPOLIS (PLAGIOPTYCHA) DIREPTA Dall.

Plate 2, figs. 12, 14.

Helix (Jeanneretia) direpta DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 10, pl. 1, figs. 7a, 7b, Aug., 1890; pt. 5, p. 1195, pl. 39, figs. 4, 5, Nov., 1900.

Tampa silex beds, rare. Dall and Burns. U. S. Nat. Mus. No. 130354.

Tribe EPIPHALLOGONA.

Genus PLEURODONTE Fischer de Waldheim.

Pleurodonte F. DE WALDHEIM, Tab. Syn. Zoogn., p. 129, 1808.—PILSBRY, *Mail. Conch.*, vol. 9, 1894, p. 84. Type, *Helix sinuata* Gmelin, Jamaica, West Indies.

A few of the larger species of silex bed *Helicidae* show a more or less granulate surface, especially *C. haruspica* Dall, and this not being found in *Cepolis*, has led Doctor Pilsbry to suggest their affinity to *Pleurodonte* of which they may represent the progenital type.

I have felt some little hesitation in referring species to this genus, on account of the fact that the pressure of sand grains on the surface of the pseudomorph sometimes gives the effect of finely granulate sculpture, but have finally done so provisionally.

PLEURODONTE HARUSPICA Dall.

Plate 1, figs. 12, 13, 14; plate 2, fig. 11.

Helix (Jeanneretia) haruspica DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 11, pl. 1, figs. 7c, 7d, Aug., 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida. Abundant but usually defective. Collected by Shepard, Post, and Dall, U. S. Nat. Mus. No. 165005.

This appears to be the largest species of the formation and, though smaller than most of the recent species, by its carinated periphery indicates its alliance with them. In perfect specimens the axis is hermetically sealed in the adult; not even a depression occurs in the umbilical region, but the young are perforate.

PLEURODONTE CRUSTA Dall.

Plate 2, figs. 8, 16.

Helix (*Jeanneretia*) *crusta* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 9, pl. 1, figs. 4, 4a, 4b, 6c, 6f, Aug., 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida. Shepard, Newman, Dall, Burns, and Post. U. S. Nat. Mus., No. 111946.

With this species was also found the following, which from the imperfect specimens at first found was regarded as merely a variety of *P. crusta*. The latter is the most common of the species found in the silex beds and often occurs most perfectly reproduced in the translucent silex.

PLEURODONTE CUNCTATOR Dall.

Plate 4, figs. 8, 9.

Helix (*Jeanneretia*) *crusta* var. *cunctator* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 10, Aug., 1890.

Tampa silex beds at Ballast Point, Tampa Bay; also on the shores of Old Tampa Bay, an arm of Tampa Bay proper, westward from Hillsborough Bay, Florida. Collected by Shepard, Newman, Dall, and Burns. U. S. Nat. Mus. No. 111950.

PLEURODONTE DIESPITER Dall.

Plate 2, figs. 18, 20.

Helix (*Jeanneretia*) *diespiter* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 10, pl. 1, figs. 1, 1a, Aug., 1890.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Abundant but usually defective. Collected by Dall and Burns. U. S. Nat. Mus. No. 111951.

There is some doubt as to the generic relationship of this species, but on the whole it seems most closely allied to *P. crusta*.

Tribe PROTOGONA.

Genus POLYGYRA Say.

POLYGYRA ADAMNIS Dall.

Plate 2, figs. 7, 9.

Helix (*Polygyra*) *adamnis* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 12, pl. 1, figs. 5, 5a, Aug., 1890.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. A single specimen collected at Ballast Point by Dall. U. S. Nat. Mus. No. 111959.

This is the earliest *Polygyra* (of the section *Dadallochila* Beck) yet reported from the Tertiary of North America.

Family BULIMULIDAE.

Genus BULIMULUS Leach.

Subgenus HYPERAULAX Pilsbry.

Hyperaulax PILSBRY, Proc. Acad. Nat. Sci., Philadelphia, for 1897, p. 10; Man. Conch., vol. 14, p. 102, 1901 (+*Bonnanius* Jousseaume, 1900). Type, *Bulimulus ridleyi* E. A. Smith. Fernando Noronha Island, Brazil.

Doctor Pilsbry regards this group as belonging to the immediate vicinity of the South American groups *Anctus* and *Odontostomus*, and as probably an early branch of the latter stock before it had divided into the modern genera above mentioned and including *Tomigerus*.

The type of the genus is a recent form from the Brazilian island of Fernando Noronha. It bears a very remarkably close resemblance to some of the silex bed species, and there can be no reasonable doubt that they are congeneric. It is a remarkable fact that the group, in the strict sense, includes as far as known only this single living species and the forms known from the silex beds. Why species should not have survived on some of the Antilles or on the mainland of South America is a mystery. The other section of the genus, *Bonnanius*, which has a conspicuously dentate aperture and short, dumpy shell, is also a denizen of the same island and represented by a single recent species.

BULIMULUS (HYPERAULAX) FLORIDANUS Conrad.

Plate 2, fig. 2.

Bulimulus floridanus CONRAD, Amer. Journ. Sci., ser. 2, vol. 2, p. 399, fig. 1, Nov., 1846; Amer. Journ. Conch., vol. 1, p. 144, pl. 11, fig. 11, 1865; not of Pfeiffer, 1856.

Bulimulus longaevis ANCEY, Le Naturaliste, May, 1881, p. 414.

Bulimulus (?) *Anctus* *floridanus* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 5, pl. 1, fig. 11, Aug., 1890.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Conrad, Dall, Burns, and other collectors. U. S. Nat. Mus. No. 165010.

The specimens have been compared with the original type of Conrad, now in the collection of the Academy of Natural Sciences at Philadelphia. Portions of Conrad's shell show traces of distinct fine sharp spiral grooves, but in the process of replacement by silica this fine almost microscopic sculpture is generally lost.

BULIMULUS (HYPERAULAX) HEILPRINIANUS Dall.

Plate 2, figs. 1, 10.

Bulimulus (?) *Anctus* *heilprinianus* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 6, pl. 1, fig. 6b, 10, Aug., 1890.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Dall and Burns. U. S. Nat. Mus. No. 111962.

The groove in the figure is a little too straight, as it usually has a slight flexure corresponding to the convex surface upon which the callus lies.

BULIMULUS (HYPERAULAX) AMERICANUS (Heilprin).

Plate 2, fig. 5; plate 3, fig. 3; plate 4, figs. 12, 14.

Partula americana HEILPRIN, TRANS. WAGNER INST., vol. 1, p. 115, pl. 16, fig. 60, 1887.

Bulimulus (? *Anctus*) *americanus* DALL, TRANS. WAGNER INST., vol. 3, pt. 1, p. 7, pl. 1, figs. 9, 9a, Aug., 1890 (with varieties *partulinus* and *laxus* Dall).

Tampa silex beds at Ballast Point; one specimen possibly adventitious in the overlying Orbitolite bed at the same locality. Collected by Messrs. Shepard, Wilcox, Newman, Heilprin, Post, Dall, and Burns. U. S. Nat. Mus. No. 165009.

The relations of the typical form and the varieties are shown by the following measurements:

	Number of whorls.	Height.	Diameter.	Aperture.
		mm	mm	mm
<i>Forma typica</i> (fig. 5).....	6.5	17.0	9.0	8.5
Variety <i>partulinus</i> (fig. 12).....	6.0	13.5	7.5	7.0
Variety <i>laxus</i> (fig. 14).....	6.0	15.5	7.2	7.3

BULIMULUS (HYPERAULAX) TAMPAE, new species.

Plate 1, fig. 3.

Shell subfusiform, of moderate size, with about six whorls; nucleus smooth, of a whorl and a half; subsequent whorls moderately convex, with a distinct, very slightly appressed suture; axial sculpture of fine, equal, regular, equally spaced, somewhat retractive threads or ridges, separated by about equal interspaces, covering the whole surface; base somewhat attenuated; umbilicus minutely perforate, overshadowed by the reflection of the pillar lip; aperture somewhat elongate, outer lip narrow behind and there hardly reflected, thicker at the beginning of the middle third, and thenceforward more broadly reflected, continuous in front and on the pillar and with a rather thick parietal callus; between the callus and the outer lip at the suture is a very narrow but deep channel. Height 13.7, maximum diameter 6 mm.

Tampa silex beds, Ballast Point, Tampa Bay, Florida.

Type from the Post collection, U. S. Nat. Mus. No. 165012.

BULIMULUS (HYPERAULAX) BALLISTAE, new species.

Plate 1, fig. 5.

Shell small, solid, moderately stout, comprising six whorls separated by a slightly appressed suture; nucleus blunt and rounded;

subsequent whorls strongly marked by distinct, equal, equally spaced, elevated, retractive axial threads; base rounded, with a narrow chink in the umbilical region, under the reflection of the pillar lip; aperture as figured, with a reflected peritreme, the reflection of the posterior half of the outer lip narrow, the anterior part with a prominent nodule at the middle of the lip, in front which the lip is thickened and more strongly reflected; pillar arcuate, thickened; body with a layer of enamel, a faint subsutural thickening, and a narrow sinus at the junction of the outer lip; the latter rises slightly at the suture near the aperture. Height of shell 10.7, maximum diameter 4.5 mm.

Tampa silix beds, Ballast Point, Tampa Bay, Florida.

Type specimen from the Post collection, U. S. Nat. Mus. No. 165013.

BULIMULUS (HYPERAULAX) STEARNSII Dall.

Plate 2, fig. 4.

Bulimulus (? *Anctus*) *stearnsii* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 7, pl. 1, fig. 12, Aug. 1890.

Tampa silix beds, at Ballast Point, Tampa Bay, Florida. One specimen, collected by Dall. U. S. Nat. Mus. No. 111964.

This is smoother than any of the other species, more slender and elongated.

BULIMULUS (HYPERAULAX) TORTILLA, new species.

Plate 1, fig. 2.

Shell small, subfusiform, blunt, with about five whorls, the nucleus in the type-specimen somewhat defective; suture distinct, slightly appressed; whorls slightly rounded, the apical two or three smooth, the later whorls sculptured with numerous close-set axial retractive threads, equal, equally spaced, and with equal furrows between them; base slightly attenuated, imperforate, with a chink behind the reflection of the pillar lip; aperture subovate; peritreme completed by a rather thick smooth parietal callus, with a feeble sinus or shallow channel at the subsutural angle; outer lip thin behind, thickened in the middle; anterior portion, together with the rest of the peritreme, thickened, simple, and slightly reflected; margin smooth. Height 8, maximum diameter 3.8 mm.

Tampa silix beds, Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 165015.

BULIMULUS (HYPERAULAX) REMOLINA, new species.

Plate 1, fig. 18.

Shell small, slender, thin, moderately acute, with five whorls separated by a distinct, slightly appressed suture; nucleus small, smooth, rapidly enlarging; subsequent whorls moderately convex,

faintly axially striated by incremental lines, except the last, where the sculpture gradually assumes the form of fine, somewhat acute, retractive, equally spaced, elevated, threadlike lines of growth, with about equal interspaces covering the whorl; last whorl attenuated in front, with a relatively rather large umbilical perforation; aperture elongate-ovate, the peritreme slightly reflected, widest over the umbilicus, the outer lip slightly compressed behind the middle; pillar simple, smooth; body with a rather thick layer of enamel connecting the inner and outer lips of the shell, with a somewhat feeble subsutural nodule separated from the posterior end of the outer lip by a slight but perceptible sulcus. Height 9.2, maximum diameter 4 mm.

Tampa silix beds, Ballast Point, Tampa Bay, Florida.

Type from the Post collection, U. S. Nat. Mus. No. 165014.

Family CERIONIDAE.

Genus CERION Bolten.

Cerion BOLTEN, Mus. Boltinianum, p. 90, 1798. First species, *Turbo ura* Gmelin. Curaçao.

Strophia ALBERS, Heliceen, zweite ausg., Nov., 1860, p. 299. Type, *Pupa mumia* Bruguière. Cuba.

Section EOSTROPHIA Dall.

Eostrophia DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 12, 1890.

Shell without gular laminae or callosities. Type, *Strophia anodonta* Dall.

CERION (EOSTROPHIA) ANODONTA Dall.

Plate 1, fig. 15.

Strophia (Eostrophia) anodonta DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 13, pl. 1, figs. 8c, 8d, Aug., 1890.

Tampa silix beds at Ballast Point; Shepard, Newman, Dall, and Burns; at Old Tampa bay, shore; Burns. U. S. Nat. Mus. No. 165016.

CERION ANODONTA var. FLORIDANUM Dall.

Plate 3, fig. 4.

Strophia (anodonta var. ?) *floridana* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 13, pl. 1, fig. 6, Aug., 1890.

Tampa silix beds at Ballast Point, Tampa Bay, Florida, Dall. U. S. Nat. Mus. No. 111975.

This has the same number of whorls as the typical form, but is shorter and stouter, with a relatively larger aperture.

MICROCERION, new genus.

Shell small, solid, few whorled, with one parietal and one pillar tooth, a nodulous parietal callus uniting the lips, a thickened duplex peritreme, both edges sharp, the posterior sharply reflected backward, the inner or anterior projecting forward, externally beveled to meet the bottom of the sinus between the two lips.

Type.—*Microcerion floridanus* Dall, new species, Oligocene of the siliceous beds of Tampa, Florida.

This little shell stands about midway between *Cerion* proper and the small Pupidae. Nothing exactly corresponding to it is known from other formations or from the recent fauna.

MICROCERION FLORIDANUM, new species.

Plate 1, figs. 16, 17.

Shell small, solid, stout, smooth, with about five whorls separated by a distinct suture; nucleus smooth, rather blunt, hardly differentiated from the subsequent rather convex whorls which are somewhat irregularly wound, the last whorl, at the suture, rising near the aperture to the periphery of the penultimate whorl; base rounded, imperforate, but with a chink behind the upper part of the pillar lip; aperture rounded, the peritreme relatively thick, duplex, the outer part wider, reflected, the inner part narrower, projecting forward, the surface concentrically striated; parietal callus moderately thick with a small nodulous projection near the junction with either lip; deeper in the throat is a single parietal nodule or denticle; pillar with a single deep-seated similar denticle; throat smooth. Height 4.75, maximum diameter 2.4 mm.

Tampa siliceous beds, Ballast Point, Tampa Bay, Florida.

Two specimens in the Post collection, U. S. Nat. Mus. No. 165018.

Family PUPILLIDAE.

Genus PUPOIDES Pfeiffer.

Pupoides PFEIFFER, Malak. Blätt., vol. 1, p. 192, 1854; for *Bulimus nitidulus* Pfeiffer, and *B. fallax* Say.

Leucochila von MARTENS in Albers' Heliceen, 1860, p. 296.

Pupoides PILSBRY, Proc. Acad. Nat. Sci. Phila., for 1900, p. 585.

PUPOIDES PILSBRYI, new species.

Plate 1, fig. 6.

Shell small, rather pointed apically, with about five inflated whorls separated by a distinctly marked suture; surface smooth except for faint incremental lines; last whorl longer than the spire, terminating in a wide rounded-quadrate aperture with a widely reflected lip di-

diminishing in width near the junction with the body-whorl across which a thin callus unites the pillar and outer lips; pillar and aperture without teeth or callosities, a marked chink behind the pillar lip but no umbilical perforation. Height 3.5, maximum diameter of shell 2 mm.

Tampa silex beds, Ballast Point, Tampa Bay, Florida, collected by E. J. Post, U. S. Nat. Mus. No. 165017.

This minute shell was submitted to Doctor Pilsbry, who concluded it should be referred to the genus *Pupoides*. It is notably smaller than the *P. marginatus* or *P. modicus*, perhaps most resembling the latter. The shell of the silex fauna is much thicker and heavier than in either of the recent American species.

Family UROCOPTIDAE.

Genus UROCOPTIS Beck.

Urocoptis BECK, Ind. Moll., p. 83, 1837.

Cylindrella PFEIFFER, Arch. f. Naturg., 1840, p. 41; not of Swainson, 1840.

UROCOPTIS FLORIDANA Dall.

Plate 1, fig. 4; plate 2, fig. 3.

Cylindrella floridana DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 13, pl. 1, fig. 6a, Aug., 1890.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Dall and Post. U. S. Nat. Mus. No. 165019.

The original specimen being somewhat defective, a better one from the Post collection has been figured for the present paper. The species belongs to the section *Gongylostoma* of Albers.

Family PLANORBIDAE.

Genus PLANORBIS Müller.

Planorbis MÜLLER (after Petiver) Verm. Terr., vol. 2, p. 152, 1774, no type selected.—LAMARCK, Prodrome, p. 76, 1799 (monotype, *Helix cornu-arietis* Linnaeus, not in Müller's original list); not of Perry, 1811.

Planorbis MONTFORT, Conch. Syst., vol. 2, p. 270, 1810 (monotype, *Helix cornu-arietis* Linnaeus).—DALL, Harriman Exp. Rep. Land and fresh water Moll. Alaska, p. 80, 1905.

PLANORBIS TAMPAENSIS, new species.

Plate 1, fig. 1.

Shell of moderate size, with about five rounded whorls, of which the last is only represented by a bit of the margin; the shell being regarded as dextral the upper side shows evenly rounded whorls with a deep suture between them, the spire subsiding in the center

of the coil so that the apex is hidden under a deep perforation; the surface is smooth; on the basal side (which in the specimen is badly obscured), the whorls seem to have formed a flattened concavity with all the whorls visible and separated by a closely appressed suture; it is not certain whether or not there was on the lower side a carina on which the suture was laid; periphery evenly and almost symmetrically rounded; aperture broken off in the specimen. Diameter of three whorls as figured 12.5 mm., that of the whole shell probably exceeded 16 mm. Height of the three remaining whorls 4.5 mm.

Tampa siliceous beds, at Ballast Point, Tampa Bay, Florida.

Type from the Post collection, U. S. Nat. Mus. No. 165020.

Section **TORQUIS** Dall.

Torquis DALL, Harriman Exp. Rep. Land and fresh water Moll., p. 86, 1905.

Type.—*Planorbis parvus* Say.

PLANORBIS (TORQUIS) WILLCOXII Dall.

Plate 3, figs. 5, 6.

Planorbis willcoxii DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 4, pl. 1, figs. 6c, 6d, Aug., 1890.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida. Dall. U. S. Nat. Mus. No. 111938.

The original type remains the only specimen of this species which has been brought to my attention.

PLANORBIS (TORQUIS) ELISUS, new species.

Plate 1, figs. 8, 9.

Shell small, depressed, almost symmetrically coiled, with at least four and a half whorls; periphery evenly rounded; surface smooth, except for inconspicuous incremental lines; suture rather deep; if regarded as dextral the upper surface displaying all the whorls, has the apex depressed in a broadly funicular space formed by the flattening of the coil; on the basal side the whorls evenly succeed one another without flattening; aperture defective. Height of shell 1.2, maximum diameter 4 mm.

Tampa siliceous beds, at Ballast Point, Tampa Bay, Florida. One specimen from the Post collection, U. S. Nat. Mus. No. 165021.

FAMILY OLEACINIDAE.

Genus **SPIRAXIS** C. B. Adams.

SPIRAXIS? TAMPAE, new species.

Shell small, thin, smooth, of five rapidly elongating whorls; apex rounded blunt, smooth, suture distinct, not crenulate; later whorls

somewhat subcylindrical or laterally flattened; base rounded, slightly imperfect in the specimen; aperture narrow, the body smooth, the pillar twisted, with the edge perceptibly thickened. Height 11, maximum diameter 2, length of last whorl 4 mm.

Tampa silex beds. One specimen collected by E. J. Post and is U. S. Nat. Mus. No. 214738.

It resembles very much in form and size *Spiraxis annae* Pilsbry,¹ but I can find no traces of the sparse longitudinal grooves attributed to the recent Jamaican species.

Family ACTEONIDAE.

Genus ACTEON Montfort.

Acteon MONTFORT, Conch. Syst., vol. 2, 1810, p. 314. Type, *Voluta tornatilis* Gmelin (not *Actaeon* Oken, 1815, or *Acteon* Fleming, 1828).—DALL, Bull. Mus. Comp. Zool., vol. 43, No. 6, p. 235, 1908.

ACTEON TAMPAE, new species.

Plate 4, fig. 10.

Shell short, inflated, with a short, rather acute spire and about five whorls; nucleus rounded, smooth; suture distinct; general surface smooth except for the spiral sculpture, which consists of two close-set equidistant deep grooves in front of the suture which make the interspace and the sutural margin look like rounded threads; near the periphery and in front of it are two or three distant shallower striae; on the base and extending to the anterior end are seven or eight equidistant, moderately impressed striae; aperture moderately wide the margins thick and solid, the pillar with one strong plait; there is no umbilical perforation but a narrow depressed smooth space behind the pillar. Height 7, diameter 4.5 mm.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida. One specimen collected by E. J. Post, U. S. Nat. Mus. No. 166094.

This species is perhaps nearest to *A. shilohensis* Whitfield, from New Jersey, but differs in its sculpture and other minor details.

Family TORNATINIDAE.

Genus ACTEOCINA Gray.

Acteocina GRAY, Proc. Zool. Soc. London, for 1847, p. 160, No. 291. Type, *Acteon acetherilli* Lea, Tertiary of New Jersey.

Tornatina A. ADAMS, Thesaurus Conch., vol. 2, p. 554, 1850.—FISCHER, Man. de Conchyl., p. 555.—PILSBRY, Man. Conch., vol. 15, p. 181, 1903. Type, *Bulla voluta* Quoy and Gaimard. Guam.

Gray's name preceds that of Adams by at least three years.

Its typical species appears to be a typical *Tornatina*, and it therefore will supersede the latter name.

¹ Mas. Conch., vol. 19, pl. 3, fig. 32.

ACTEOCINA WETHERILLI (Lea).

Acteon wetherilli I. LEA, Contr. Geol., p. 213, pl. 6, fig. 224, 1833.

Acteocina wetherilli GRAY, Proc. Zool. Soc. London, p. 160, No. 294, 1847.

Tornatina wetherilli CONRAD, Amer. Journ. Conch., vol. 1, p. 35, 1864.—DALL, Trans. Wagner Inst., vol. 3, p. 15, 1890.

Shell cylindrical, truncate above, smooth and rather solid; spire short and blunt; suture impressed; a single fold on the pillar; whorls four; aperture narrow, about four-fifths the whole length; outer lip simple, sharp. Length 5, width 2.5 mm.

Tertiary of Deal, New Jersey (Lea). Siliceous beds at Ballast Point, Tampa Bay, Florida; also the Tampa limestone above the siliceous beds, and from wells dug in the vicinity of Tampa, and at La Penotiere's sulphur spring. Also from the Oligocene of Santa Domingo, Trinidad, and Jamaica, West Indies. U. S. Nat. Mus. No. 97469.

ACTEOCINA SQUARROSA, new species.

Plate 6, fig. 8.

Shell of moderate size, subcylindrical, slightly wider anteriorly, of about four whorls, separated by a very deeply excavated channeled suture; the outer margin of the suture is formed by a sharp-edged thin carina, the inner margin is duplicated by a layer of enamel so that in the adult, in the whorls preceding the last, the carina seems double-edged; nucleus small, swollen, sunken so that the nuclear whorl is not visible above the squarely truncated posterior end of the shell; axial sculpture of faint vertical incremental lines, somewhat irregular in strength and receding arcuately to and near the carina; spiral sculpture on the anterior half of the whorl at first faint, but becoming accentuated anteriorly, and extending to the labial callus, composed of fine, nearly equally spaced grooves or striae, apparently not punctate; aperture as long as the shell, narrow behind, where the commissure is deeply incised, wide in front; outer lip straight, sharp, simple; body without enamel; pillar short, almost horizontally twisted, bearing a single strong plait on a heavy callus, behind which is a rather deep narrow bounding furrow; anterior sinus wide and deep. Length of shell 11.5, depth of sutural channel 1, maximum diameter of shell 5.5 mm.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 165025.

Genus RETUSA Brown.

Retusa BROWN, Ill. Conch. Gt. Brit., ed. 1, Index and expl., pl. 38, figs. 1-6, 1827.

Utriculus BROWN, Ill. Conch. Gt. Brit., ed. 2, p. 58, and expl. pl. 19, 1844; not *Utriculus* Schumacher, Essai, p. 203, 1817.

54907⁵—Bull. 90—15—3

RETUSA VAGINATA Dall.

Utriculus vaginatus DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 16, Aug., 1890; pt. 2, p. 219, pl. 20, fig. 2, 1892.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Dall. U. S. Nat. Mus. No. 97473.

This species recalls *R. mayoi* Dall, of the recent fauna, in miniature, but has a deeper suture with the margin in front of the suture sharp edged as in *Olivella*.

Family SCAPHANDRIDAE.

Genus SCAPHANDER Montfort.

Scaphander MONTFORT, Conch. Syst., vol. 2, p. 334, 1810. Type, *Bulla lignaria* Linnaeus.

Assula SCHUMACHER, Essai, pp. 78, 258, 1817.

The gizzard plates of the animal were found separated from the rest of its anatomy and described under the names of *Gioenia* and *Tricla* in the eighteenth century.

SCAPHANDER PRIMUS Aldrich.

Scaphander primus ALDRICH, Journ. Clin. Soc. Nat. Hist., 1885, p. 148, pl. 2, figs. 7a, 7b.—DALL, Trans. Wagner Inst., vol. 3, p. 17, 1890.

Shell ovate, with crowded, inequidistant transverse striae; spire concealed; aperture large, expanding below, contracted above by the intrusion of the body whorl; outer lip sharp, arcuate, rising above the apex of the shell, pillar arcuate with a narrow callous margin and a thin layer of callus on the body. Length 15, diameter 10 mm.

Tertiary of Red Bluffs, Mississippi; Aldrich, Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 97476.

Though the specimens from the silex beds are smaller, they appear to be merely immature specimens of Aldrich's species.

Family BULLARIIDAE.

Genus BULLARIA Rafinesque.

Bulla LINNAEUS, Syst. Nat., ed. 10, p. 725, 1758; not *Bulla* Linnaeus, same reference, p. 427 (Orthoptera).

Bullaria RAFINESQUE, Anal. Nat., 1815, p. 142 (new name for *Bulla* Linnaeus).—DALL, Bull. Mus. Comp. Zool., vol. 43, No. 6, p. 243, Oct., 1908. Type, *B. ampulla* Linnaeus.

Bulles BLAINVILLE, Malac., 1825, pp. 477, 626; not of Rafinesque, 1815.

Vesica SWAINSON, Malac., p. 390, 1840.

Since Linnaeus used his generic name on two occasions and for two entirely different animals, we are obliged to substitute for the later one the first valid name applied to the group, which is that of Rafinesque, as I pointed out in 1908.

BULLARIA PETROSA Conrad.

Bulla petrosa CONRAD, Amer. Journ. Sci., ser. 2, vol. 2, p. 399, 1846, with figure. Not *Bullina petrosa* Conrad, Amer. Journ. Sci., ser. 2, vol. 5, p. 433, 1848, from Miocene of Oregon, nor *Bulla petrosa* Conrad, in Dana, Geol. U. S. Expl. Exp., p. 727, 1849 (= *Haminea petrosa*, Oregonian Miocene).—DALL, Trans. Wagner Inst., vol. 3, p. 18, 1890.

Rare in the Tampa silex beds, where it was first found by Conrad and later by Dall. U. S. Nat. Mus. No. 97488.

This belongs to the typical section of the genus with perforate apex and resembles *Bullaria solida*, but is of smaller size.

This species has also been collected from the Oligocene limestone of Jacksonboro, Georgia.

BULLARIA (HAMINEA ?) SULCOBASIS, new species.

Plate 6, fig. 6.

Shell small, subovate, anterior third spirally striated, posterior two-thirds smooth or faintly marked by incremental lines; whorls involved, thin, the apex depressed, showing only the external whorl; outer lip as long as the shell, thin, simple; anterior third with fine spiral striae, at first close, later coarser and with wider interspaces; around the minutely perforate umbilicus there is a narrow space free from striae; aperture behind extending beyond the apex, and rather narrow, in front wider; body with a thin wash of callus; pillar lip short, smooth with a slight free reflection over the umbilical region. Height 8.2, maximum diameter 5.4 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. One specimen from the Post collection, U. S. Nat. Mus. No. 165027.

This species may belong to the genus *Haminea*, but the specimen is hardly perfect enough to be positive as to its proper location.

Superorder STREPTONEURA.

Order CTENOBRANCHIATA.

Superfamily TOXOGLOSSA.

Family TEREBRIDAE.

Genus TEREBRA Bruguiere.

Terebra BRUGUIERE, Encycl. Meth., vol. 1, p. 15, 1780 (no species mentioned); Lamarck, Prodr., p. 71, 1799. Sole example, *Buccium subulatum* Linnaeus.

Epitonium (sect. 3) BOLTEN, Mus. Boltenianum, p. 93, 1799.

Terebra DALL, Nautilus, vol. 21, No. 11, p. 124, Mar., 1908, Bull. Mus. Comp. Zool., vol. 43, No. 6, p. 246, 1908.

This group was associated with *Buccinum* by Linnaeus, with *Turritella* and *Scalaria* by Bolten, and with *Cerithium* by Say. The name was used for *Turritella* in the Museum Calonnianum. A revision of the group by the writer appears as above cited.

Section OXYMERIS Dall.

Oxymeris DALL, Proc. U. S. Nat. Mus., vol. 26, No. 1342, p. 951, 1903; new name for *Acus* Gray, not of Edwards; section of *Terebra*; Nautilus, vol. 21, No. 11, March, 1908, p. 124; Bull. Mus. Comp. Zool., vol. 43, No. 6, p. 246, 1908. (Not of August, 1900, as mistakenly entered in the synonymy of the last citation.)

TEREBRA (OXYMERIS) DISLOCATA Say.

Plate 5, fig. 2.

Cerithium dislocatum SAY, Journ. Acad. Nat. Sci. Phila., vol. 2, p. 235, 1822.

Terebra petiti KIENER, Moll. Terebra, p. 37, pl. 13, fig. 32, 1838.

Terebra rudis GRAY, Proc. Zool. Soc. London, 1834, p. 60.

Terebra dislocata HOLMES, Post. Pl. fos. S. Car., p. 70, pl. 11, fig. 12, 1858.

Terebra carolinensis CONRAD (part), Post. Pl. fos. S. Car., p. 70.

Terebra dislocatum EMMONS, N. Car. Geol. Surv., p. 257, 1858.

Terebra (Acus) dislocata DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 24, Aug., 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; Dall. Also Miocene of Virginia and North Carolina; Pliocene of the Carolinas and of the Florida Caloosahatchee beds; Post Pliocene of the whole coast from Maryland southward; and living from Maryland southward to Florida, the Bahamas, and Venezuela. U. S. Nat. Mus. No. 113610.

This well-known form indulges in many variations. The Ballast Point specimens are somewhat intermediate between the typical form and *T. tantula* and *T. protexta*. Miocene specimens from South Carolina agree exactly with the large *T. dislocata* variety *rudis*. Similar mutations are common among the recent specimens.

TEREBRA (OXYMERIS) TANTULA Conrad.

Terebra tantula CONRAD, Journ. Acad. Nat. Sci. Phila., n. ser., vol. 3, p. 114, pl. 11, fig. 15, 1848; Amer. Journ. Conch., vol. 1, p. 28, 1865.—DALL.

Trans. Wagner Inst., vol. 3, pt. 1, p. 24, 1890.

Oligocene of Vicksburg, Mississippi, Conrad; of the Tampa silex beds at Ballast Point, Tampa Bay, Florida; Dall; and at De Funiak Springs, Florida; Burns. U. S. Nat. Mus. No. 163028.

Specimens of the typical *tantula* have been obtained from Ballast Point since my remarks in the Wagner Institute Transactions were published.

Family CONIDAE.

Genus CONUS Linnaeus.

Conus LINNAEUS, Syst. Nat., ed. 10, p. 712, 1758; ed. 12, p. 1165, 1768.—LAMARCK, Prodrome, p. 69, 1799 (monotype, *C. marmoreus* Linnaeus).

CONUS PLANICEPS Heilprin.

Plate 6, figs. 1, 2.

Conus planiceps HEILPRIN, Trans. Wagner Inst., vol. 1, p. 110, fig. 48, 1887.—

DALL Trans. Wagner Inst., vol. 3, pt. 1, p. 25, pl. 11, figs. 5, 5a, Aug., 1890; pt. 2, p. 219, 1892.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; also from silicified rock at Martin Station about 12 miles North of Ocala, Florida; Willcox. The specimen figured is U. S. Nat. Mus. No. 165029.

The species has also been found at Bailey's Mill Creek sink, in Jefferson County, Florida, about 3 miles southwest of Lloyd's station on the railway. Here the fossils occur in the form of siliceous pseudomorphs, as at Ballast Point, in a sort of clay overlying a bed of limestone, with a number of other species common to the Tampa silex beds.

CONUS ILLIOLUS, new species.

Plate 6, figs. 3, 5.

Shell solid, slender, elongate, turritid, of about $9\frac{1}{2}$ whorls; nucleus small, bulbous, of about 1 whorl, smooth and oblique; suture distinct; the shoulder of the whorl sharply keeled, the space between it and the suture slightly excavated, with two feeble spiral threads equidistant from each other, the suture, and the keel; excavated space transversely sculptured with numerous concavely flexuous, equal, close-set, slightly elevated incremental lines; suture meeting the whorl behind at nearly a right angle some distance below the keel; axial sculpture, beside that above mentioned, comprising a series of very small, short, subequal, and nearly equidistant folds on the whorl just below the keel, with subequal interspaces, which do not nodulate the keel and are stronger on the earlier whorls and nearly obsolete on the last whorl; these are crossed by two or three feeble spiral threads with narrower intervals, below which the spiral sculpture is obsolete and the surface practically smooth for two-thirds the length of the whorl; the anterior third has rather coarse spiral threading of which the first 10 are paired, the anterior 10 being coarser and equidistant, aperture narrow, outer lip (defective); pillar straight, the anterior edge a little prominent and twisted. Length 41.5, breadth at keel 17 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Type-specimen from the Post collection, U. S. Nat. Mus. No. 165030.

CONUS DESIGNATUS, new species.

Plate 6, fig. 4.

Shell of moderate size with low, broadly conical spire of about 8 whorls; nucleus prominent, subglobular, inflated, smooth; subsequent

whorls flattened on the spire, narrow, bordered at the shoulder by a slightly rounded keel, and separated by a distinct but not deep suture; the whorls on the spire are not spirally sculptured, but show faint traces of incremental, concavely arcuate lines; last whorl in front of the shoulder smooth, acutely conic, the only sculpture being in the anterior third, which has about a dozen fine spiral threads with wider interspaces becoming more crowded and feebly minutely nodulous anteriorly; on the smooth posterior part of the whorl in certain lights can be seen spiral lines distant and fine, but which appear rather to be in the substance of the shell and do not sculpture the surface; aperture narrow elongate, the canal short and wide; the outer lip sharp, simple and very slightly convexly arcuate. Length of shell 23.8, of aperture 21.5, maximum diameter 12 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 165031.

Family TURRITIDAE.

Genus TURRIS Bolten.

- Turris* BOLTEN (after Rumphius, 1704) Mus. Bolt. 1798, p. 123. First species, *Murex babylonius* Linnaeus (after *Turris babylonica* of Rumphius).—GRAY, Proc. Zool. Soc. Lond. for 1847, p. 134, type, *T. babylonius* (Linnaeus).—H. and A. ADAMS, Gen. Rec. Moll., vol. 1, 1853, p. 87.—GAER, Journ. Acad. Nat. Sci. Phila., vol. 4, 1860, p. 378.—DALL, Journ. Conch. (Leeds), vol. 11, April, 1906, p. 291; Bull. Mus. Comp. Zool., vol. 43, No. 6, 1908, p. 255, not *Turris* Montfort, 1810, or *Turris* Lesson, 1837.
- Pleurotoma* LAMARCK, Prodrôme, 1799, p. 73. Sole example, *Murex babylonius* Linnaeus.

TURRIS ALBIDA Perry.

Plate 5, fig. 13; plate 14, fig. 7.

- Pleurotoma albida* PERRY, Conch. expl., pl. 32, fig. 4, 1811.—DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 28, pl. 4, fig. 8a, 1890.
- Pleurotoma virgo* LAMARCK, An. s. Vert., vol. 7, p. 94, 1822.
- Pleurotoma cochlearis* CONRAD, Journ. Acad. Nat. Sci. Phila., ser. 2, vol. 1, p. 115, pl. 11, fig. 23, 1848.
- Pleurotoma haitiensis* SOWERBY, Quart. Journ. Geol. Soc. London, vol. 6, p. 50, 1849.
- Pleurotoma harvetti* GUFFY, Quart. Jour. Geol. Soc. London, vol. 22, p. 290, pl. 17, fig. 6, 1866.

Oligocene of Vicksburg, Mississippi; of Santo Domingo and Bowden, Jamaica; of the Tampa silex beds, Ballast Point, Tampa Bay, Florida; Pliocene of the Caloosahatchie River, Florida; living in the Gulf of Mexico and the Antilles in 26 to 125 fathoms. U. S. Nat. Mus. No. 112083.

Conrad's figure is very bad, but I have compared specimens with his types.

TURRIS VIBEX Dall.

Pleurotoma (albida var.?) *vibex* DALL, Bull. Mus. Comp. Zool., vol. 18, No. 19, p. 73, 1889.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 166095.

The examination of many specimens, both recent and fossil, since 1889, has confirmed the belief that this form is specifically distinct from *T. albida*. It is not only much smaller and proportionately much more slender than *albida* of the same length, but the recent form has blackish spiral bands in the periostracum between the spiral keels, while the young of *albida* is uniformly yellowish-white.

The most nearly related form is the Vicksburgian *Pleurotoma cochlearis* of Conrad, which I regard as conspecific with *T. albida*.

TURRIS (SURCULA) SERVATA Conrad.

Plate 5, fig. 16.

Pleurotoma servata CONRAD, Journ. Acad. Nat. Sci. Phila., ser. 2, vol. 1, p. 115, pl. 11, fig. 18, 1848.—DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 28, 1890.

Oligocene of Vicksburg, Mississippi, and of the Tampa silex beds at Ballast Point, Florida; Dall and Post. U. S. Nat. Mus. No. 115267.

Genus DRILLIA Gray.

Drillia GRAY, Jardine's Ann. Nat. Hist., vol. 1, p. 28, 1838. Type, *D. umbilicata* Gray.

The typical *Drillia* is a rare African shell with a flaring umbilicus, quite different from the majority of the species commonly referred to it by the authors. However, in the chaotic state of the systematic arrangement of the family which exists at present, I can do no more than follow the general practice.

DRILLIA CONDOMINIA, new species.

Plate 12, fig. 25.

Shell of moderate size, rather thin, with an elongated, turreted spire of about eight whorls, separated by a closely appressed but distinct suture; nucleus defective, subsequent whorls strongly shouldered and sculptured; axial sculpture of (on the penultimate whorl ten) rounded ribs beginning at the shoulder, on the spire reaching the suture in front, and on the last whorl obsolete on the base, with subsequent interspaces which become wider on the last part of the last whorl; these ribs are slightly protractive; lines of growth not conspicuous; spiral sculpture of (on the spire 3 to 5) revolving

threads, the posterior two paired, the others more distant, on the last whorl about 15, becoming obsolete on the canal and slightly swollen where they override the ribs; on the base these threads are slightly undulated by their intersection with the lines of growth, and many of the interspaces have one (or even two) much finer intercalary threads; anal fasciole behind the shoulder but not quite at the suture, wide, smooth, or marked with concave growth-lines corresponding to the anal sulcus, somewhat excavated, and having a single thick obscurely defined thread between it and the suture; aperture rather wide; anal sulcus wide, shallow; outer lip thin, internally smooth, arcuately protractive, receding toward the canal, slightly crenulate by the spiral sculpture; pillar straight, smooth; canal nearly straight, ample. Length of shell exclusive of the nucleus 25, of aperture 14, maximum diameter 10 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Type-specimen from the Post collection, U. S. Nat. Mus. No. 165032.

DRILLIA LAPENOTIERI Dall.

Plate 8, fig. 4.

Pleurotoma lapenotieri DALL, Trans. Wagner Inst., vol. 5, p. 1199, pl. 43, fig. 14, 1900.

Tampa silex beds at Ballast Point, Tampa Bay, Florida, Dall. U. S. Nat. Mus. No. 130351.

This species recalls some of the large Oligocene forms of Santo Domingo. Only one specimen has so far been obtained.

DRILLIA SEVERINA, new species.

Plate 5, fig. 4.

Shell with a smooth rather swollen nucleus and about eight sculptured whorls; suture appressed, the margin in front of it in the early whorls elevated and sharp, later cordlike and swollen; anal fasciole in front of it nearly smooth except for incremental lines and a few very faint spirals; the fasciole is distinctly excavated; axial sculpture of about (on the last whorl) 10 slightly oblique rounded prominent ribs beginning at the shoulder of the whorl and becoming obsolete on the base; these are crossed by (between the sutures) four, and on the last whorl by about a dozen prominent spiral cords with finer threads between them and on the canal; the intervals between the cords are subequal as are those between the ribs; the anal sulcus is wide and rather shallow, the lip in front of it thin, sharp, and roundly produced; the pillar and body have a slight wash of callus; the canal is shorter than the aperture, rather deep and wide, slightly recurved.

Height of shell 23, of last whorl 15, maximum diameter of shell 9 mm.

Tampa silex beds, not rare. U. S. Nat. Mus. No. 166096.

This species is near *T. servata* Conrad, also found in the same horizon, but is more robust and has ten instead of only six axial ribs. It grows larger than the dimensions above given, but the description has been drawn from a more perfect if smaller specimen.

DRILLIA OSTREARUM Stearns.

Drillia ostrearum STEARNS, Proc. Boston Soc. Nat. Hist., vol. 15, p. 22, 1872.—DALL, Proc. U. S. Nat. Mus., vol. 6, p. 328, 1883.—TRYON, Man Conch., vol. 6, p. 197, pl. 84, fig. 79, 1884.—DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 30, 1890.

Oligocene of Alum Bluff, Chattahoochee River, and of the Tampa silex beds, Tampa Bay, Florida; Pliocene of the Caloosahatchie River, Florida; living from North Carolina south to Florida and Yucatan between low-water mark and 15 fathoms. U. S. Nat. Mus. No. 1122088.

A species of this type occurs in practically every horizon from the Eocene up.

DRILLIA SELLA, new species.

Plate 12, fig. 10.

Shell small, slender, acute, solid, with nine whorls separated by a closely appressed suture; nucleus smooth, plump, of about one whorl; subsequent whorls strongly and sharply sculptured; axial sculpture of (on the penultimate whorl nine) prominent rounded ribs, beginning in front of the anal fasciole, continuing over the whorl, on the spire to the suture, on the last whorl over the periphery, gradually becoming obsolete on the base; the interspaces are about equal in width to the ribs, and the incremental lines are not prominent; spiral sculpture behind the anal fasciole of a prominent keel close to the suture; the fasciole being a strong smooth-surfaced constriction, in front of which the ends of the ribs form a sort of shoulder to the whorl; there are also (on the spire three, on the last whorl nine) prominent spiral threads with wider interspaces which override the ribs and are continuous between them; the suture is laid on the fourth thread in front of the fasciole; anal sulcus shallow, rather wide; aperture narrow, outer lip prominent in the middle, sharp-edged, not varicose; inner lip raised, continuous over the body to sutural commissure, smooth; pillar smooth, canal wide and deep. Height 11.4, maximum diameter 3.7 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Type-specimen from the Post collection, U. S. Nat. Mus. No. 165035.

DRILLIA EUPORA, new species.

Plate 5, fig. 3.

Shell small, slender, elongate, of more than 6 flattish whorls (specimen decollate); suture distinct, separated from the fasciole in front by an elevated spiral ridge, carinated and beveled from the carina to the suture which is slightly undulated by the ribs; anal fasciole excavated and spirally faintly striated, especially on the anterior slope; axial sculpture of (on the last whorl) about 20 sharp low straight narrow ribs, with much wider interspaces, and extending from the shoulder to the canal; spiral sculpture between the sutures of 4 fine elevated threads, including 1 at the shoulder and a fifth on which the suture is laid, with wider flat interspaces; on the last whorl there are 14 or 15 equal and equally spaced similar threads; aperture narrow; anal sulcus wide, shallow; outer lip defective; canal long and straight, rather narrow; pillar and body with a rather thick smooth layer of callus. Height of five whorls 16, diameter at decollation 2, maximum diameter behind aperture 5.75 mm.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida, one specimen. U. S. Nat. Mus. No. 166099.

This species belongs to the group of *D. ostrearum* Stearns and resembles *D. abundans* Conrad, but is more slender and has sharper ribs.

DRILLIA BELOTHECA, new species.

Plate 4, fig. 7.

Shell small, slender, 8-whorled, the nucleus smooth and rounded; axial sculpture of 10 low narrow straight ribs with wider interspaces; spiral sculpture of a prominent cord at the suture, a nearly smooth more or less excavated anal fasciole, between the sutures two, and on the last whorl eight or nine subequal prominent threads crossing the ribs without interruption and giving the effect of a cancellated surface; anal sulcus shallow, outer lip (fractured) a heavy callus on body and pillar, canal short, straight. Height of shell 9, of last whorl 5.25; diameter 3 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. One specimen. U. S. Nat. Mus. No. 166097.

A very characteristic little species not closely related to any other of this horizon.

DRILLIA SPICA, new species.

Plate 12, fig. 8.

Shell small, slender, thin, acute, elongate, with about 8 whorls; nucleus of 2 smooth whorls rounded above; subsequent whorls sculptured, suture closely appressed but without a sutural cord; axial

sculpture of (on the penultimate whorl 12) narrow, rounded flexuous ribs, equal and with subequal interspaces, extending from the suture to the canal, concavely arcuate and compressed in front of the suture, thus indicating the anal fasciole, then arcuately protractive and in front receding to the canal; the ribs and interspaces smooth or faintly marked by incremental lines; spiral sculpture only of half a dozen oblique threads on the back of the siphonal fasciole; aperture moderately wide; anal sulcus wide and shallow, a narrow strip of callus between it and the suture; outer lip arcuately produced in the middle, sharp edged with a varical rib behind it between which and the last regular rib the whorl is smooth; inner lip and pillar with a moderately thick callus, smooth, and with a slightly raised outer edge; canal short, wide, slightly recurved. Length 13, maximum diameter 5 mm.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 163033.

DRILLIA TECLA, new species.

Plate 12, fig. 18.

Shell small, slender, thin, acute, elongate, with about seven whorls; nucleus of one whorl and a half, smooth, slightly bulbous; subsequent whorls sculptured, with a closely appressed suture, the sutural edge swollen into a prominent cord; axial sculpture of (on the penultimate whorl 10) narrow, rounded slightly flexuous ribs, with wider smooth interspaces, extending from the anal fasciole to the base of the whorl; surface smooth, probably polished in life; spiral sculpture comprising only a smooth constriction in front of the sutural cord, and on the base and canal about eight somewhat alternated threads mostly with wider interspaces diminishing anteriorly; aperture wide, anal sulcus as deep as wide; outer lip thin, with sharp edge and the usual varical rib behind it; body and pillar smooth, not callous; canal short, wide, and deep. Length 10, maximum diameter 4 mm.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 163036.

DRILLIA SMILIA, new species.

Plate 12, fig. 21.

Shell small, slender, solid, with 7 or more whorls, the apex of the specimen defective as well as the outer lip; suture distinct, appressed, preceded by a very strong cord which separates it from the anal fasciole; axial sculpture of (on the penultimate whorl 15) strong

rounded whorls which extend from the anal fasciole to the canal with wider interspaces which are axially striated by rather conspicuous incremental lines; spiral sculpture, comprising the sutural cord; a deep constriction, spirally striated, which forms the anal fasciole; and, in front of the fasciole about a dozen strong, subequal, distant, and nearly equally spaced rounded threads which are distributed over the whole whorl in front of the constriction; these threads are but slightly swollen where they override the ribs, between the sutures only two to four threads are visible; aperture sublunate; anal sulcus shallow; outer lip defective, probably produced with a swollen varix behind it; body and pillar callous; canal moderately wide, straight, short. Length of (decollate) shell 12.5, of last whorl 7, maximum diameter 4 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 165037.

DRILLIA EUPATORIA, new species.

Plate 12, fig. 16.

Shell small, slender, acute, sharply sculptured, of about 7 whorls; suture distinct, not deep; anal fasciole marked by a constriction slightly in front of the suture, thus cutting off the posterior ends of the ribs and marginating the suture; axial sculpture of (on the penultimate whorl about 20) rather sharp narrow ribs, slightly retractorily flexed where they cross the furrow of the anal fasciole, with wider interspaces, extending from suture to suture on the spire, and over the whorl to the canal on the last whorl; spiral sculpture of very fine equal parallel threads with about equal interspaces, on the spire and shoulder, and (about 7) more widely spaced on the base, and four or five more close set on the canal; these threads override the ribs but do not nodulate them; aperture sublunate; outer lip (in the specimen) thin, sharp, simple; pillar smooth, short; canal short and wide. Height of shell 7, of last whorl 5, maximum diameter 2.8 mm.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida. One specimen from the Post collection, U. S. Nat. Mus. No. 165040.

This species has much the sculpture of No. 165039, U. S. Nat. Mus., but is a much smaller and relatively more sharply sculptured shell. It is possible that the adult may have a varicose outer lip, and that the type-specimen is immature, in which case the species would be referable to the group to which *Drillia ostrearum* Stearns belongs. The first or nuclear whorl is smooth and somewhat inflated. The second shows the ribbing but not the spiral threads.

DRILLIA TAMA, new species.

Plate 12, fig. 23.

Shell small, turritid, of about 7 whorls; nucleus defective, subsequent whorls sharply sculptured; suture distinct; axial sculpture of (on the penultimate whorl 17) equal, narrow, not nodulous ribs, with much wider intervals, which between the suture and the anal fasciole are sharply retractive, in front of the fasciole slightly protractively arcuate, and on the last whorl extend unaltered to the canal; spiral sculpture of numerous close-set equal threads, prominent on the anal fasciole and on the canal where they are more widely separated; on the last whorl these threads slightly crenulate the summits of the ribs in overriding them. Aperture defective in the specimen, the anal sulcus near the suture with a depressed narrow fasciole behind it; pillar smooth, not callous; canal short, rather wide, hardly recurved. Height of shell 10, of last whorl 5, maximum diameter about 3.5 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

One specimen from the Post collection, U. S. Nat. Mus. No. 165029.

Section CYMATOSYRINX Dall.

Cymatosyrinx DALL, Bull. Mus. Comp. Zool., vol. 18, No. 29, p. 95, 1889.

Type, *Pleurotoma lunata* Lea, Miocene of Virginia.

DRILLIA GLYPHOSTOMA, new species.

Plate 5, fig. 12.

Shell small, acute, with about 9 whorls, including the small rounded nucleus; surface polished, suture distinct, axial sculpture of about 14 narrow, flexuous rather sharp ribs with subequal interspaces, the ribs cross the anal fasciole and are abruptly arcuate there, reaching the suture which they slightly undulate, and in the other direction extending to the canal; the canal and base all sculptured with faint spiral threads which seem to be missing on the rest of the shell; aperture wide behind with a conspicuous rounded anal sulcus with an outwardly flaring edge; outer lip internally much thickened, incurved with a sharp edge, but no denticulation; body and pillar with a smooth layer of callus, the canal recurved, short, with a pronounced siphonal fasciole and a chink behind the pillar-callus. Height of shell 15, of last whorl 8.5, of aperture 6, diameter above the outer lip 4 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; two specimens. U. S. Nat. Mus. No. 166098.

The absence of denticulations on the pillar lip removes this species from the genus *Glyphostoma* Gabb, which it otherwise much resembles, and the character of the outer lip precludes a reference to *Clathrella*.

DRILLIA (CYMATOSYRINX?) SILFA, new species.

Plate 12, fig. 22.

Shell small, solid, the whorls rapidly increasing in diameter, the surface smooth except for axial sculpture; nucleus lost, subsequent (5) whorls strongly sculptured with twelve narrow, prominent, arcuately protractive ribs, continuous from the canal to the suture and so on to the apex in a continuous series; lines of growth not visible, canal short, smooth, slightly recurved; aperture rather wide, body and pillar slightly erased by the animal in process of growth. Height 7 mm. without the (lost) nucleus, maximum diameter 3.3 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

One specimen in the Post collection, U. S. Nat. Mus. No. 165034.

This specimen is obviously immature; the aperture if complete would probably have the characters of the section *Cymatosyrinx*, but it is distinct from any of the other species yet collected from this horizon.

DRILLIA (CYMATOSYRINX) NEWMANI Dall.

Plate 3, fig. 9; plate 7, fig. 3.

Drillia newmani DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 29, pl. 4, figs. 5, 5a, 1890.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Newman. U. S. Nat. Mus. No. 112087.

Genus MANGILIA Risso (em.).

Mangilia (Leach Ms.) Risso, Hist. Nat. Eur. Mer., vol. 4, p. 219, 1826. First species, *M. costulata* Risso. *Murex nebula* Montagu.

Mangilia PHILIPPI, Handb. der Conch., p. 138, 1853 (after Mangili, Italian naturalist.—DALL, Bull. Mus. Comp. Zool., vol. 43, No. 6, 1908, p. 259).

MANGILIA ILLIOTA, new species.

Plate 12, fig. 15.

Shell small, solid, acute, with about 8 whorls separated by a distinct but appressed suture; nucleus small, inflated, bulbous, smooth; subsequent whorls strongly sculptured; axial sculpture of (on the last whorl 13) narrow, rounded, nearly straight ribs, separated by wider interspaces and extending from the sutural cord to the vicinity of the canal with a constriction at the anal fasciole; the interspaces behind the periphery are smooth, the surface polished, and the incremental lines hardly visible; spiral sculpture of a rather strong low cord in front of the suture, a constriction indicating the anal fasciole in front of the cord, and in front of the periphery a dozen or more feeble subequal spiral threads growing stronger toward the canal and with about equal interspaces; on the back of the canal there are a

number of finer close-set threads; aperture sublunate, anal sulcus shallow, the outer lip thin, simple, not lirate internally; body and pillar smooth, not callous; canal short, wide, straight. Length 8, maximum diameter 3 mm.

Tampa silix beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 163038.

MANGILIA, sp. indet.

Tampa silix beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 165041.

A single specimen different from the preceding species seemed too badly preserved for identification.

Family CANCELLARIIDAE.

Genus CANCELLARIA Lamarck.

Cancellaria LAMARCK, Prodrôme, 1799, p. 71. Sole example, *Voluta reticulata* Linnaeus.

Subgenus TRIGONOSTOMA Blainville.

Trigonostoma BLAINVILLE, Man. de Mal., vol. 2, 1827, p. 652. Type, *Murex acula* Gmelin, Syst. Nat., pt. 6, p. 3551, No. 95, 1792. (= *Delphinula trigonostoma* Lamarck, An. s. Vert., vol. 6, p. 231, note 1822).

Trigona PERRY, Conch., 1811, pl. 51, fig. 1; not of Jurine, 1807.

Trigonostoma, JOUSSEAUME, Le Naturaliste, Paris, vol. 9, 1887, pp. 157, 213; reprint 1888, p. 22.

CANCELLARIA SUBTHOMASIAE Dall.

Plate 3, fig. 7; plate 10, fig. 1.

Cancellaria subthomasiae DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 44, pl. 2, fig. 3. 1890.

Shell of moderate size, strongly sculptured, turritid, of about 7 whorls; nucleus minute, smooth, of about one whorl; subsequent whorls axially sculptured with (on the penultimate whorl 11, on the last whorl nine) strong, crenulated, elevated ribs, angular, or even unispinose at the shoulder behind which the whorl is subtabulate; these ribs are moderately retractive, feeble at the suture, most elevated at the shoulder, and continue over the whorl to the siphonal fasciole, somewhat recurved, and concave behind and axially striated in front; spiral sculpture of numerous fine threads, with a tendency to alternate in strength, subequidistant, the interspaces equal to the threads or wider; the threads override and somewhat crenulate the edges of the ribs; base with a strong siphonal fasciole and small umbilical perforation; aperture subtriangular, with continuous mar-

gin, notched in front obliquely by a distinct siphonal sulcus; outer lip subvaricose, with about a dozen internal lirae; pillar lip thinner, free from the body, sharp-edged, with three well-marked plaits, the posterior most prominent. Length of shell 20, of last whorl 14, of aperture 11, maximum diameter 12.2 mm.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 165042.

The original specimen collected by me being quite defective, it was thought best to fully describe the species anew, from a beautifully preserved specimen in the Post collection. It belongs to the section *Bivetopsia* Jousseaume, 1888.

CANCELLARIA DEPRESSA, new species.

Plate 10, fig. 4.

Shell short, turbinate, solid, with about four well-rounded whorls; nucleus defective; suture deep, not channeled, the whorl in front of it narrowly tabulate; axial sculpture of (on the last whorl about 15) narrow, rounded, more or less unequal, riblets, which extend from the suture, slightly swollen at the angle of the shoulder, to the rounded margin of the umbilical funnel, with usually subsequent interspaces; the incremental lines are also rather coarse and prominent; all the axial sculpture is slightly retractive; spiral sculpture of (at the beginning of the last whorl about 10) subequal and mostly subequally spaced, flattish threads with wider interspaces, overriding the ribs, but not notably swollen at the intersections; near the periphery a few of these are alternately smaller and closer, there are also two or three finer threads between the shoulder and suture; umbilicus large and deep, funicular, with spirally threaded walls; aperture subtriangular, the margin continuous; body with a rather thick smooth layer of callus; outer lip with a small subsutural internal liration, and about 8 more lirae between the shoulder and canal; margin sharp oblique with a moderately swollen external varix; canal short, narrow, shallow; pillar-lip smooth with three plaits, enlarging posteriorly. Height of shell 17.5, of last whorl 14.5, maximum diameter 12 mm.

Tampa siliceous beds, at Ballast Point, Tampa Bay, Florida. One specimen from the Post collection, U. S. Nat. Mus. No. 165043.

This also belongs to the section *Bivetopsia* Jousseaume.

CANCELLARIA (SVELTIA), sp. indet.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida. One specimen, U. S. Nat. Mus. No. 165044.

The specimen is immature with the base defective. It has 5 whorls with a pronounced suture; about 12 rounded ribs crossed on

the last whorl by about 25 spiral threads with wider interspaces; the umbilicus is deep but narrow with its margin broadly rounded. The pillar has two prominent plaits, and the aperture was probably trigonal. The remaining portion of the shell is 9.5 mm. long with a maximum diameter of 5 mm. It belongs to the section called *Sceltia* by Jousseaume.

Family OLIVIDAE.

Genus OLIVA Martyn.

Oliva MARTYN, Univ. Conch., vol. 3, pl. 111, 1786. First species, *O. corticata* Martyn.

This genus is commonly attributed to Bruguière, but was proposed at least three years earlier by Martyn, as I showed in 1905.¹

OLIVA POSTI, new species

Plate 12, fig. 24.

Shell small, solid, smooth, with 4 or more whorls; nucleus defective; suture moderately channeled; shell rather slender; last whorl with a wash of callus near the suture; aperture long and narrow, acute behind; outer lip slightly thickened, internally smooth; inner lip plicate, in front as figured; canal deeply excavated. Height, 21.5; height of last whorl, 18; maximum diameter, 8.5 mm.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus., No. 165045.

Genus OLIVELLA Swainson.

Olivella SWAINSON, Zool. Ill., vol. 2, pl. 58 and text, 1831. Type, *Oliva dama* Mawe; Dall, U. S. Geol. Survey, Prof. paper No. 59, p. 31, 1909.

OLIVELLA LATA Dall.

Plate 15, fig. 4.

Olivella lata DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 45, pl. 4, fig. 8b, 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida, Shepard, Dall, and Post. U. S. Nat. Mus., No. 165046.

This is perhaps nearest some of the recent forms like *O. strigata* Reeve, and *O. fuscocincta* Dall from the West Indies, none of which, however, are as broad and thin as *O. lata*.

¹Proc. U. S. Nat. Mus., vol. 29, No. 1425, p. 428.

OLIVELLA EUTORTA, new species.

Plate 10, fig. 10.

Shell small, stout, solid, with $5\frac{1}{2}$ whorls separated by a deeply channeled suture; first whorl rounded and subglobular; subsequent whorls smooth, moderately convex; aperture wide in front, behind ending in a deep narrow sinus at the end of the suture, between the body and the outer lip; anterior third of the body covered by a revolving band of enamel with a groove at the posterior edge, otherwise smooth; the outer lip sharp, smooth within; body with a thin wash of callus, pillar thick, callous, twisted, with its anterior edge forming a strong rounded fold with a depression behind it, the inner surface of the pillar finely spirally lirate; canal wide, shallow. Length, 12; length of aperture, 8.5; maximum diameter of shell, 6 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 165047.

OLIVELLA COLLETA, new species.

Plate 12, fig. 9.

Shell very small, smooth, slender, with about $5\frac{1}{2}$ whorls, separated by a deeply channeled suture; nucleus minute subglobular, of about one whorl; subsequent whorls subcylindrical, smooth; last whorl attenuated in front, with a faint fasciolar band of enamel close to the anterior edge; aperture narrow behind, wide in front; outer lip thin, sharp, simple; inner lip not callous; pillar with one or two faint very anterior folds; canal wide and deep. Length of shell 4.5, of aperture 2.5, maximum diameter 1.8 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

One specimen from the Post collection, U. S. Nat. Mus. No. 165048.

Genus ANCILLA Lamarck.

Ancilla LAMARCK, Prodrôme, p. 90, No. 6, 1799. Type, *Voluta ampla* Gmelin; Syst. an. s. Vert. 1801, p. 73; sole example cited, *A. cinnamomea* Lamarck; Dall. Trans. Wagner Inst., vol. 3, pt. 2, p. 225, 1892.

Ancillaria LAMARCK, Ann. du Mus., Paris, vol. 16, p. 306, 1811. Not *Ancilla* Meuschen, 1787.

The name of this genus was changed by Lamarck because it was thought too close to *Ancylus* (Geoffroy) Müller, 1774. Meuschen's name is misspelled *Ancilla* in the Index Animalium, but in any case, as his system was frankly not Linnean, we are fortunately not obliged to consider his names, which are all in the plural number and not systematically binomial.

ANCILLA SHEPARDI Dall.

Plate 7, fig. 1.

Ancillaria shepardi DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 46, pl. 4, fig. 4, 1890.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Shepard, Dall, Burns, and others, U. S. Nat. Mus. No. 165049.

Family MARGINELLIDAE.

Genus MARGINELLA Lamarck.

Marginella LAMARCK, Prodrôme, p. 75, 1799. Type, *Voluta glabella* Linnaeus.

Pterygia (sp.) BOLTEN, Mus. Boltenianum, 1798, p. 51.

Pterygia LINK, Besch. Rostock Samuel, 1806, p. 93. First species, *Voluta glabella* Linnaeus.

Voluta (sp.) LINNAEUS, GMELIN, PERBY, etc.

The *Pterygia* of Bolten, though heterogeneous according to modern ideas, when the shells included in it are compared, seems to be on the whole a very natural grouping if form alone be considered, though we now know that the species have very different affinities. He named no type and therefore we have to consider what is left after various genera have been deducted from it. We may at once exclude the members of the prior genera *Voluta* (Linnaeus) Scopoli, 1777, and *Strombus* Linnaeus, of which last an immature specimen is included in Bolten's list.

Genera subsequently eliminated in 1799 by Lamarck are: *Columbella* (*mercatoria*) and *Marginella* (*glabella* Linnaeus), both represented by monotypes. The next reviser was Link, in 1806. He attempted to reconcile the names of Bolten and Lamarck by dividing the *Marginellas* in the wide sense into two natural groups, applying Bolten's name to one and Lamarck's to the other. Unfortunately instead of giving Lamarck's name to the group containing the monotype of Lamarck, he applied it to the group containing *Pterygia persicula* Linnaeus, and used Bolten's name for the group containing Bolten's first species, which is the same as Lamarck's monotype. This, if accepted, would leave us no escape from regarding *Marginella* Lamarck as a synonym of *Pterygia* Bolten, while *Marginella* Link, not Lamarck, would equal the later *Persicula* Schumacher, 1817.

We may take the view, however, since Lamarck has segregated *Marginella* (*glabella*) and *Columbella* (*mercatoria*) as representing new groups from the heterogeneous *Pterygia* of Bolten, in which still remained valid material for more than one genus, that *Pterygia* must therefore be applied to one of the still remaining valid generic groups and proceed by elimination to determine which one, as no

one has fixed a type-species for *Pterygia*. Montfort, in 1810, gave a masculine termination to Lamarck's name and called the genus *Marginellus*. Perry, in 1811, referred his only species of *Marginella* to the genus *Voluta*.

The next reviser of the classification was Schumacher, in 1817. He accepted *Marginella* Lamarck, with Lamarck's type. He further eliminates in succession the following new genera, *Persicula* (*Voluta persicula* Linnaeus), *Imbricaria* (*Voluta conus* Gmelin), and *Cylindra* (*Voluta crenulata* Gmelin). The last is a homonym of *Cylinder* Müller, 1766, and Montfort, 1810, and therefore not to be accepted. It is a member of the same genus as Bolten's *Pterygia nucella* according to the consensus of authors. I therefore name the latter (= *Voluta dactylus* Linnaeus) as type of *Pterygia*, of which *Cylindromitra* Fischer, 1884, will be a synonym. In this way we may avoid the confusion which the rejection of *Marginella* at the present day would create, since there are few species of *Cylindromitra* and they have so far been the subject of very little publication.

The species from the silex beds so far obtained all have the spire exposed. Doubtless if the complete fauna was available we should also find species of *Persicula* and *Volvarina*, as in most of our tertiary faunas.

MARGINELLA MOLLITOR, new species.

Plate 12, fig. 1.

Shell small, smooth, solid, with about 4 whorls, which are obscured by a continuous coat of enamel covering the spire; last whorl rather convex, the periphery at the shoulder terminating at the aperture in a prominent wide, smooth varix, distinctly and sharply separated by a difference in level from the surface behind it, and which also marginates the canal; aperture narrow; outer lip receding at the suture and canal, thick, having between the shoulder and canal about 11 internal denticulations, or short lirae, which do not enter the aperture beyond the varix; body smooth, with a slight wash of callus; pillar slightly concavely arcuate with four nearly equal and equally spaced plaits, of which the anterior is at the edge of the wide shallow and short canal. Length of shell 11.5, of apertures 7.5, maximum diameter 6 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

Type specimen from the Post collection, U. S. Nat. Mus. No. 165058.

MARGINELLA INFECTA, new species.

Plate 12, fig. 3.

Shell small, smooth, solid, of about 4 whorls, the spire being covered with a coat of enamel which obscured the suture and nucleus.

at whorl comprising most of the shell, moderately convex, aperture narrow, wider in front; outer lip thickened, especially toward the middle, its posterior end somewhat protracted on the whorl behind the suture; posterior sinus of the aperture rounded, body with a thin wash of callus; pillar short, carrying four prominent subequal plaits, the anterior of which is coincident with the twisted edge of the pillar; canal very short and wide. Height 7.7, maximum diameter 4.7 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

Type specimen from the Post collection, U. S. Nat. Mus. 165061.

MARGINELLA BELLULA Dall.

Plate 16, fig. 9.

Marginella bella var. *bellula* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 53, pl. 4, fig. 8c, 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; Newman, Burns, and Dall. U. S. Nat. Mus. No. 165053.

MARGINELLA INEPTA Dall.

Plate 15, fig. 2.

Marginella bella var. *inepta* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 53, pl. 4, fig. 8d, 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; Newman and Dall. U. S. Nat. Mus. No. 112101.

MARGINELLA FAUNULA Dall.

Plate 16, fig. 14.

Marginella faunula DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 53, pl. 4, fig. 9b, 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; rare; Dall. U. S. Nat. Mus. No. 112103.

The habit of this species is somewhat like *M. fauna* Sowerby, but the form is more like *M. bellula*.

MARGINELLA ELEGANTULA Dall.

Plate 16, fig. 11.

Marginella elegantula DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 54, pl. 4, fig. 7, 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; rare; Dall. U. S. Nat. Mus. No. 112104.

The characters of this species point to it as a probable precursor of such forms as *M. margarita* and *M. haematita* Kiener, but the Pliocene link in the series has not yet been detected.

MARGINELLA BALLISTA Dall.

Plate 16, fig. 12.

Marginella ballista DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 47, pl. 4, fig. 6, 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; Dall. U. S. Nat. Mus. No. 112906.

This has a peculiarly rounded form and thickened outer lip destitute of internal denticulation.

MARGINELLA TAMPAE Dall.

Plate 11, fig. 6.

Marginella (ballista var.?) tampa DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 47, Aug., 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; Dall. U. S. Nat. Mus. No. 112097.

It was at first thought this might be a variety of *M. ballista*, but the examination of a larger number of specimens leads to the conclusion that it is distinct. The nearest species to it thus far noted is *M. incrassata* Nelson from the Peruvian Tertiary, which has a lower spire, one less plait, and a thinner outer lip.

MARGINELLA LIMATULA Conrad.

Plate 11, fig. 7.

Marginella limatula CONRAD, Journ. Acad. Nat. Sci. Phila., vol. 7, p. 140, 1834; Fossils Medial Tert. U. S., p. 86, pl. 49, fig. 9 (err. for fig. 11 *vide* Conrad in litt.) 1845.—DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 49, 1890.

Porcellana limatula TUOMEY and HOLMES, Pleloc. foss. S. Car., p. 130, pl. 27, figs. 10, 11, 1857.

Marginella roscida REDFIELD, Proc. Acad. Nat. Sci. Phila., vol. 12, p. 174, 1860.

Prunum limatula CONRAD, Amer. Journ. Conch., vol. 4, p. 67, pl. 6, fig. 5, 1868.

Oligocene of the White Beach sandstone (and the Tampa silex beds?) Burns and Dall; Miocene of Virginia, the Carolinas and Florida; Pliocene of South Carolina and Florida, on the Caloosahatchee and Shell Creek; living abundantly off the Carolina coast in 25 to 100 fathoms, on a bottom of sand and gravel. U. S. Nat. Mus. No. 11462.

This is a species rather northern in its present range and has not so far been found living in Floridian waters. Some of the Pliocene specimens show traces of white flecks, somewhat like those of the *M. nivosa* Hinds, a marking which is much less common in the recent

shell. The specimen figured is from the Miocene of South Carolina, the White Beach specimen being too poor to figure.

MARGINELLA GREGARIA, new species.

This species, in my original studies from imperfect material supposed to be a variety of *M. limatula*, seems now, from material received too late for figuring, to be quite distinct. I therefore describe it comparatively until an opportunity may arise when I can supply a figure.

The shell is of a shape not unlike *M. limatula*, but longer and more ovoid. Its relative diameter at the shoulder of the last whorl is much less and the outer lip at the shoulder is therefore less prominent. The thickening of the outer lip is less pronounced, and in all the specimens received it is perfectly smooth, while in *M. limatula* fully adult specimens have it finely denticulate on the inner edge. The plaits are also much more delicate than in *M. limatula*. Comparative measurements are as follows:

M. gregaria: Length 17.5, maximum diameter 9.3, length of aperture 15 mm.

M. limatula: Length 14.7, maximum diameter 9, length of aperture 13 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Dall and Post. U. S. Nat. Mus. No. 165081.

M. gregaria somewhat resembles *M. onchidella* Dall, of the Pliocene, but is smaller and less arcuate laterally, with the spire more apparent. The specimen of *M. limatula* measured above is that figured on plate 11, figure 7, of this paper.

MARGINELLA BELLA Conrad.

Plate 16, fig. 10.

Prunum bella (sic) CONRAD, Amer. Journ. Conch., vol. 4, p. 67, pl. 6, fig. 4, 1868; Proc. Acad. Nat. Sci., Phila., for 1862, p. 564 (name only).

Marginella bella DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 53, pl. 4, figs. 9^a, 1890.

Oligocene of the Tampa silex beds and of the overlying Orbitolite bed at Ballast Point, Tampa Bay, Florida; Burns and Dall; Miocene of Virginia; Pliocene of the Caloosahatchie River, Florida; living off the coast of North Carolina on sandy bottom in 14 to 50 fathoms. U. S. Nat. Mus. No. 165052.

This species was the type of Conrad's undefined group *Porcellanella*, which he afterwards abandoned. Among Conrad's original specimens two species were represented, one of which he had already named *M. succinea*, the other will retain the present name. Figure 9^a of the Wagner Transactions represents the normal form. The recent

shell is yellowish or pinkish white with obscure, fine, opaque, axially directed streaks, and varies a good deal in size.

MARGINELLA IMPAGINA, new species.

Plate 12, fig. 4.

Shell minute, smooth, with indication of what may possibly be two spiral color bands on the last whorl, with a gently tapered spire of about 4 whorls, the suture obscured by a coat of enamel which covers the entire spire; shell fusiform; aperture subulate; outer lip ascending a little from the suture behind, arcuately projecting in the middle, thin, simple with (in the specimen) no varix; canal wide, shallow; pillar with four equal and equally spaced oblique plaits, the anterior plait situated on the edge of the pillar; body with little or no callus. Length 5, maximum diameter 2.7 mm.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 165060.

This specimen may be slightly immature.

MARGINELLA POSTI, new species.

Plate 12, fig. 6.

Shell small, smooth, of about 4 whorls, which are more or less obscured by a coating of enamel covering the entire spire, solid, slender; on the last whorl are a few faint axial sulci or incremental markings; terminating the whorl in the adult is a heavy wide varix, the posterior edge of which is sharply elevated above the general surface; aperture narrow behind, wide in front; outer lip varicose, simple, thicker in the middle, receding to the canal, without internal lirae; body smooth not callous; pillar shorter than the aperture with four subequal, equidistant plaits, the anterior set on the twisted edge of the pillar; canal short, wide, with a continuation of the varix marginating it on the back. Length 6.4, maximum diameter, 3.5 mm.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 165057.

MARGINELLA INTENSA, new species.

Plate 10, fig. 8.

Shell small, short, solid, smooth, with a short spire, obscured by a coat of enamel covering it entirely, and about 3 whorls; aperture narrow; outer lip produced behind over nearly half the penultimate whorl, heavily smoothly varicose, the varix distinctly limited behind, marginating the lip and canal, internally smooth, thicker in the middle; body with a slight wash of enamel; pillar with four low,

stout, equal and equally spaced plaits, the anterior on the edge of the pillar at the narrow and shallow canal. Length 8, maximum diameter 5 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 165055.

MARGINELLA MYRINA, new species.

Plate 12, fig. 2.

Shell small, stout, short, smooth, of about 3 whorls, the spire, nucleus, and suture obscured by a rather thick coat of enamel; outer lip varicose and externally marginate, receding toward the suture and broader toward the middle; aperture rather wide, posterior sinus rounded; outer lip not internally lirate; body with a thin wash of callos; pillar with four distinct plaits, the anterior coincident with the edge of the pillar and with the adjacent plait somewhat larger than the posterior pair, all about equidistant; canal shallow, short, wide. Height 6, maximum diameter 4 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 165056.

MARGINELLA NEWMANI Dall.

Plate 16, fig. 13.

Marginella newmani DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 54, pl. 4, fig. 8, 1890.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; rare; Mr. L. G. Newman, U. S. Nat. Mus. No. 112105.

This species groups with the last.

Family VOLUTIDAE.

Subfamily CARICELLINAE Dall.

Caricellinae DALL, Smiths. Misc. Coll., vol. 48, pt. 3, No. 1663, p. 344, Feb., 1907.

The features of this subfamily were fully set forth in my paper above referred to. One or two changes may be noted here as advisable. The *Voluta stearnsii* Dall of Alaska which, from worn specimens, was supposed to be referable to *Adelomelon* proves to have a shelly protoconch, not unlike that of *Fulgoraria*, and may be regarded as the type of a new section *Arctomelon* of that genus. A shell described by Locard in the Report on the mollusks of the Talisman expedition in 1897, under the name of *Latiromitra*, and supposed by him to be related to *Latirus*, is sufficiently like my

Miomelon of 1907 to make a comparison advisable. At any rate Locard's shell has nothing to do with *Latirus*.

Proscaphella Ihering, June, 1907, is a synonym of *Miomelon* Dall, February, 1907. A genus named by me *Calliotectum* in 1889, and supposed to belong in the Pleurotomidae, proves to belong to the Volutidae. Some magnificent species, closely related, were obtained by the U. S. Bureau of Fisheries steamer *Albatross* in deep water in the Philippines.

Subfamily VOLUTINAE.

Genus LYRIA Gray.

Lyria GRAY, Proc. Zool. Soc. London, for 1847, p. 141; type, *Voluta nucleus* Lamarck. Not *Liria* (from *Liri* of Adanson) Gray, Philos. Mag. and Journ., 1824.

The different derivations of *Liria* and *Lyria* fortunately prevent the necessity of regarding them as homonyms; in which case we should have been obliged to substitute *Otocheilus* Conrad, 1865, for *Lyria* Gray.

LYRIA PULCHELLA Sowerby.

Plate 10, fig. 11.

Voluta pulchella SOWERBY, Quart. Journ. Geol. Soc. London, vol. 6, p. 46, pl. 9, fig. 4, 1850.

Lyria pulchella DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 84, pl. 4, fig. 3, 1890.

Oligocene of the Tampa siliceous beds at Ballast Point, Tampa Bay, Florida (Dall), and of Santo Domingo (Sowerby and Gabb). Figured specimen U. S. Nat. Mus. No. 165064.

LYRIA HEILPRINI, new name.

Plate 10, fig. 13.

Voluta (Lyria) zebra HEILPRIN, Trans. Wagner Inst., vol. 1, p. 110, pl. 15, fig. 46, 1887; not *Voluta zebra* Leach, Zool. Misc., vol. 1, pl. 12, fig. 1, 1814.

Lyria zebra DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 84, 1890.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida; Willcox, Burns, and others. U. S. Nat. Mus. No. 165063.

In my paper in the Transactions I refrained from giving a new name to this species, of which the specific name is preoccupied as above indicated, thinking the late Professor Heilprin might rename it himself, but as he did not do so I now substitute another.

The young of this species is very close to *L. harpula* Lamarck, but the adults develop marked distinctions.

LYRIA MUSICINA Heilprin.

Plate 9, figs. 1, 4.

Voluta musicina HEILPRIN, Trans. Wagner Inst., vol. 1, p. 109, pl. 15, fig. 45, 1887.*Lyria musicina* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 85, 1890.

Oligocene of Richard's quarry, Ocala, Florida, in the so-called Nummulitic bed; of the Chipola River marl, near Bailey's Ferry (now the County bridge); of the lower bed at Alum Bluff, Chattahoochee River; and of the Tampa silex beds at Ballast Point, Tampa Bay, Florida; Shepard, Willcox, Burns, and others. U. S. Nat. Mus. No. 111842.

LYRIA SILICATA, new species.

Plate 10, fig. 3.

Shell small, light, slender, with 5 or more gently convex whorls, the apex decollate in the type-specimen; suture distinct, not channeled; third whorl (counting backward from the aperture) with about 16 narrow, rather sharp, riblets, with much wider interspaces extending from suture to suture; these riblets on the later whorls become less regularly spaced and obsolete, on the last whorl absent; except for these riblets the surface appears to be smooth; last whorl much the largest, terminating at the outer lip in a thickened, rounded, and expanded varix; aperture narrowly lunate with no sinus or channel at the posterior commissure; inside of the outer lip smooth, without lirae; body with a thin layer of callus; pillar short, thick, with two strong anterior plaits behind which are indications of six or more minor unequal lirae; canal short, wide, deep, the pillar extending a little in advance of the outer lip, twisted, and with a faint siphonal fasciole. Length of (decollate) shell 27.2, of last whorl 22.5, of aperture 16, maximum diameter 14 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. One specimen from the Post collection, U. S. Nat. Mus. No. 165065.

Family MITRIDAE.

Genus MITRA Martyn.

Mitra MARTYN, Univ. Conch., vol. 1, 1784, table 1, fig. 19. (First species, *M. tessellata* Martyn).—BOLTEN, Mus. Boltzenianum, 1798, p. 135.—LAMARCK, Prodrôme, 1799, p. 70; monotype, *M. episcopalis* Linnaeus.

The first appearance of the genus *Mitra* in binomial nomenclature was in Martyn's Universal Conchologist, in the explanatory table of plates 19 to 23, inclusive. The name derives from Rumphius, who used it for shells of the same group in 1705, in the Amboinische Rariteitskammer. Five species were included, all belonging to the

genus *Mitra* in the Lamarckian sense. These were 1, *M. tessellata* Martyn; 2, *M. fasciata* Martyn (= *M. castra* Lamarck); 3, *M. sphærolata* Martyn; 4, *M. nevilis* Martyn (belonging to the group of *flaris* Linnaeus); and 5, *M. versicolor* Martyn (probably afterwards described as *M. nebulosa* Swainson).

It is obvious that the type of the genus and of the typical section must be one of these species, and not the *M. episcopalis* which was Lamarck's monotype 15 years later. Numbers 1 and 3 belong to the subgenus *Scabricola* Swainson; No. 2 to the section *Swainsonia* H. and A. Adams; No. 4 to the subgenus *Cancilla* Swainson; while No. 5 is referred by Tryon to the typical section as sometimes understood and to which it is nearest. However, the possession of marked punctate spiral grooving induced Swainson to make a section for it which he called *Nebularia*. This name must give way to *Mitra* in the strict sense, while for the smooth red-spotted Mitras, hitherto wrongly regarded as typical, the new sectional name *Papalaria* may be used.

The silex bed fossils of this genus belong to the subordinate groups *Cancilla* Swainson and *Fusimitra* Conrad, for the most part.

MITRA SILICATA Dall.

Plate 14, fig. 2.

Mitra (*mississippiensis* Conrad, var?) *silicata* DALL, TRANS. WAGNER, INST., vol 3, pt. 1, p. 93, pl. 4, fig. 11, 1890.

Tampa silex beds between Ballast Point and the town, collected by Mr. Shepard. U. S. Nat Mus. No. 165066.

This species was included in Conrad's genus *Fusimitra* (type *M. cellulifera* Conrad) since abandoned.

MITRA SYRA, new species.

Plate 12, fig. 17.

Shell small, slender, acute, with about 9 whorls separated by a distinct but not deep suture; nucleus smooth subglobular, the succeeding 3 whorls smooth, or very faintly axially striated, the sculptured whorls succeeding abruptly; axial sculpture of (on the penultimate whorl 17) narrow, slightly protractive, rounded ribs extending completely over the whorls to the base on the last whorl, with an inconspicuous constriction near the suture, but otherwise smooth and even, separated by much wider interspaces; spiral sculpture of (between the sutures about 7) flattened close-set cords, which do not override the ribs, and continue to the canal on the last whorl, where they are succeeded by four or five larger and more distant rounded spirals; aperture narrow, sublunate; outer lip simple, hardly thick-

ened, not internally lirate; inner lip smooth; pillar with four plaits, the largest posterior, the others regularly diminishing forward, the most anterior not quite reaching the edge of the pillar; canal rather wide and deep, slightly recurved. Length of shell 15.5, of last whorl 9, of aperture 6, maximum diameter 4.5 mm.

Tampa silix beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus., No. 165067.

MITRA MYRA, new species.

Plate 12, fig. 7.

Shell small, acute, with $6\frac{1}{2}$ whorls, of which the first 2 are smooth, subsequent whorls being sculptured with narrow rounded riblets (on the penultimate whorl 12) slightly protractive and with wider interspaces, which extend from suture to suture, making slight undulations in the sutural line where the ends of the riblets reach it; on the last whorl the riblets are carried over the periphery and become obsolete on the base; there is no spiral sculpture except on the canal, where there are 4 threads, the anterior pair close set, small, the third large with a marked sulcus on each side, and the fourth faint at the base of the whorl; the remainder of the surface is smooth; aperture narrow, less than half the length of the shell; outer lip (defective in the specimen); pillar strong, with three strong, oblique plaits decreasing in prominence forward; canal short, wide, very slightly recurved. Length of shell 8, of last whorl 5.8, maximum diameter 3.5 mm.

Tampa silix beds at Ballast Point, Tampa Bay, Florida.

One specimen in the Post collection, U. S. Nat. Mus., No. 165068.

Genus STRIGATELLA Swainson.

Strigatella SWAINSON, Mal., p. 319, 1840. Type, *Mitra zebra* Lamarck.

STRIGATELLA AMERICANA, new species.

Plate 9, fig. 2.

Shell ovoid, heavy, with a short acute spire of 7 whorls, exclusive of the (lost) protoconch; upper whorls closely spirally threaded, the threads disappearing in front of the shoulder on the last whorl; suture closely appressed; axial sculpture of fine rounded riblets, with equal interspaces traversing the whole width of the last whorl, but faint and irregular on the spire; outer lip much thickened with a prominent nodule internally near the middle; body with a thin wash of callus; pillar with four stout nearly horizontal plaits, with wider interspaces; canal short, narrow, sharply recurved; siphonal

fasciole well marked. Height 28, maximum diameter 15, aperture 20 mm.

Oligocene of the Chipola River marls near the county bridge (station 2212), U. S. Nat. Mus. No. 114343; also in the Tampa silex beds?

Fragments were found at Ballast Point, which were supposed to belong to this species, but were subsequently mislaid. It is probably the first American fossil species of the genus.

Genus CONOMITRA Conrad.

Conomitra CONRAD, AIDER, JOURN. CONCH., vol. 1, p. 25, Feb., 1865; first species, *Mitra fusoides* Lea, CONTR. GEOL., p. 162, pl. 6, fig. 176, 1833. Eocene.

This genus was named, but not diagnosed, three species mentioned, but no type selected, *C. fusoides* was selected by Tryon, STR. and SYST. CONCH., vol. 2, p. 170, 1883.

CONOMITRA STAMINEA Conrad.

Plate 10, fig. 2.

Mitra staminea CONRAD, JOURN. ACAD. NAT. SCI., PHILA., ser. 2, vol. 1, p. 120, pl. 12, fig. 4, Aug. 1848.

Mitra vicksburgensis CONRAD, JOURN. ACAD. NAT. SCI., PHILA., ser. 2, vol. 1, p. 120.

Conomitra angulata HEILPRIN, TRANS. WAGNER INST., vol. 1, p. 110, pl. 15, fig. 47, 1887.

Conomitra staminea DALL, TRANS. WAGNER INST., vol. 3, pt. 1, p. 94, pl. 4, fig. 2, 1890.

Oligocene of Vicksburg, Mississippi; of the Tampa silex beds at Ballast Point, and at Six Mile Run, near Orient station, northeast from Tampa, and in the overlying Orbitolite bed; also in the Chipola marl of the Chipola River, northwest Florida; Burns, DALL and others. U. S. Nat. Mus. No. 165069.

An extremely similar recent species *C. blakeana* DALL, has been dredged in deep water in the Antilles.

Family TURBINELLIDAE.

Genus XANCUS Bolten.

Xancus BOLTEN, MUS. BOLTENIANUM, p. 134, 1798. Type, *Voluta pyrum* Gmelin.

Turbinella LAMARCK, PRODROME, p. 73, 1799. Type *Voluta pyrum* LINNAEUS.

Bolten's name is derived from the East Indian appellation of Chank, or Siank shell, given to the typical species.

XANCUS POLYGONATUS Heilprin.

Turbinella polygonata HEILPRIN, Trans. Wagner Inst., vol. 1, p. 108, pl. 15, fig. 43, 1887.—DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 97, 1890.

Oligocene of the Tampa silex beds and of the lower bed at Alum Bluff, Chattahoochee River, Florida, Heilprin, Dall, and others. U. S. Nat. Mus. No. 165071.

This species was described from a very imperfect young specimen from Tampa and the description somewhat enlarged from fragments from Alum Bluff. A well-preserved specimen is still a desideratum.

Genus VASUM Bolten.

Vasum BOLTEN, Mus. Boltenianum, p. 56, 1798. First species, *Voluta capitellum* Gmelin.—LINK, Besch. Rostock Samml., vol. 3, p. 119, 1807.

Cynodonta SCHUMACHER, Essai, p. 73, 1817.

Cynodonta SCHUMACHER, Essai, p. 141, 1817. Sole example, *Voluta ceramica* Linnaeus.

This genus is represented by some very remarkable species in the Tertiary of the Coastal Plain of the United States.

VASUM SUBCAPITELLUM Heilprin.

Plate 7, fig. 2.

Vasum subcapitellum HEILPRIN, Trans. Wagner Inst., vol. 1, p. 109, pl. 15, fig. 4, 1887.—DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 99, pl. 4, fig. 12, 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida. Willcox, Burns, Dall, Post and others. U. S. Nat. Mus. No. 165072.

This species should be compared with the *Turbinellus aedificatus* Guppy, which I have not had an opportunity of studying.

VASUM ENGONATUM Dall.

Plate 11, figs. 2, 3.

Vasum haitense SOWERBY var. *engonatum* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 100, 1890.

Oligocene of the lower bed at Alum Bluff, Chattahoochee River, and of the Chipola marl, Chipola River, at the county bridge, formerly Bailey's Ferry, west Florida; of White Beach, Little Sarasota Bay; and Ballast Point, Tampa Bay, south Florida; Burns, Dall, Willcox, and Post. U. S. Nat. Mus. No. 165070.

An examination of the Haitian species leads to the conclusion that it is distinct from the present one.

Family FASCIOLARIIDAE.

Genus FASCIOLARIA Lamarck.

Colus (sp.) BOLTEN, Mus. Boltinianum, p. 117, 1798. First species, *Murex tulipa* Gmelin.

Fasciolaria LAMARCK, Prodrome, p. 73, 1799. Sole example, *Murex tulipa* Linnaeus.

FASCIOLARIA PETROSA, new species.

Plate 6, fig. 7.

Shell of moderate size and about 7 whorls exclusive of the (lost) nucleus; whorls with a somewhat turritid appearance, due to the flattish slope to a prominent shoulder emphasized by the strong ribs; suture closely appressed; spiral sculpture of rounded threads with equal or wider interspaces, the threads alternating in size, the larger ones becoming more prominent and slightly nodulous on the base and canal; axial sculpture of 7 to 9 strong rounded ribs, with wider interspaces and obsolete above the shoulder and on the base; aperture subovate; the outer lip sharp and crenulate, the throat with about 24 entering lirae; a shallow subsutural channel with a rather thick callus on the body and pillar; the edge of the pillar is prominent with three well-defined plaits behind it diminishing in size backward, with a faint indication of a fourth; siphonal fasciole strong, with a deep chink between it and the callus of the pillar; canal narrow. Height of type-specimen 100, last whorl 70 (the canal and apex slightly defective), maximum diameter 47 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida, one specimen; E. J. Post, U. S. Nat. Mus. No. 165073.

This is a well marked species of the general aspect of the group to which *F. gigantea* Kiener belongs.

Genus LATIRUS Montfort.

Latirus MONTFORT, Conch. Syst., vol. 2, p. 531, 1810. Sole example, *Murex polygonus* Gmelin.

Lathyrus LATREILLE, Fam. Nat., p. 187, 1825.

Turbinella (sp.) LAMARCK et RUC. allis.

LATIRUS FLORIDANUS Heilprin.

Plate 8, Fig. 6.

Latirus floridanus HEILPRIN, Trans. Wagner Inst., vol. 1., p. 108, pl. 15, fig. 47, 1887.—DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 106, pl. 8, fig. 2, 1890.

Oligocene of the "nummulitic bed" near Martin Station, eastward from Tampa, and of the Tampa silex beds at Ballast Point,

Tampa Bay, Florida; Heilprin and Dall. U. S. Nat. Mus. No. 65077.

The following species originally described as a variety seems from additional material to be distinct.

LATIRUS MULTILINEATUS Dall.

Latirus floridanus var. *multilineatus* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 107, 1890.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Dall and Heilprin. U. S. Nat. Mus. No. 112121.

LATIRUS RUGATUS Dall.

Plate 8, fig. 2.

Latirus rugatus DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 107, pl. 8, fig. 7 (only), 1890.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Burns and Dall. U. S. Nat. Mus. No. 112123.

By an error in numbering figure 6 of plate 8 in the original publication was referred to this species, but it really belongs to another shell.

LATIRUS CALLIMORPHUS Dall.

Plate 7, fig. 8.

Latirus callimorphus DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 107, pl. 8, fig. 1, 1890.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Dall. U. S. Nat. Mus. No. 112122.

A single specimen was collected by the writer. It differs by its shorter canal and the number of its axial ribs from *L. multilineatus*.

Genus FUSINUS Rafinesque.

Fusinus RAFINESQUE, Anal. de la Nature, p. 145, 1815. New name for *Fusus* Lamarck, not Helbling.

Fusus BEUGUÈRE, Encycl. Méth., p. 15, 1789; nude name. Lamarck, Prodrome, p. 73, 1800. Sole example, *Murex colus* Linnaeus. Not *Fusus* Helbling, 1779.

Fusinus DALL, U. S. Geol. Survey Prof. Paper 59, p. 36, 1909.

I have shown in the above-cited paper and in the Journal of Conchology (Leeds) for April, 1890, p. 289, that the familiar name *Fusus* having been first binomially used for a group of species entirely distinct from that of Lamarck can not be used for the latter, and therefore it is necessary to take the first available substitute as the name of the latter.

The Museum Calonnianum having been eliminated by the International Commission for Zoological Nomenclature, the name *Colus* which occurs in it need not be considered.

FUSINUS BALLISTA Dall.

Plate 7, fig. 6.

Fusus ballista DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 127, pl. 8, fig. 4, 1890. (*Fusus nexilis* by typographical error in explanation of plate 8, p. 186.)

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Dall and Burns. U. S. Nat. Mus. No. 112052.

FUSINUS QUINQUESPINUS Dall.

Plate 5, fig. 6.

Fusus? quinquespinus DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 128, 1890; pt. 2, p. 234, pl. 20, fig. 8, 1892.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; rare; and also in the overlying lime rock, in the form of molds, associated with *Cerithium*; Dall. U. S. Nat. Mus. No. 112053.

Complete specimens of this species have not yet been obtained, and there is yet some question as to its correct generic place.

FUSINUS NEXILIS Dall.

Plate 8, fig. 8.

Fusus (Chrysodomus?) nexilis DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 128; pl. 8, fig. 6, 1890; (fig. 4 by typographical error in explanation of plate 8, p. 196).

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; rare; Dall. U. S. Nat. Mus. No. 112054.

The figure does not show as clearly as desirable the strength of the sculpture on the upper part of the spire, the curvature of the canal or its constriction at the base of the whorl.

Family BUCCINIDAE.

Genus BUSYCON Bolten.

Busycon BOLTEN, Mus. Boltinianum, p. 149, 1798. First species, *Fulgur carica* Montfort.

Fulgur MONTFORT, Conch., vol. 11, 1810, p. 503, and figure. Type, *F. carica* var. *eliceans* Montfort.

Sycopsis CONRAD, Amer. Journ. Conch., vol. 3, p. 184, 1867.

Sycopsis (Browde) GILL, Amer. Journ. Conch., vol. 3, p. 147, 1867; not of Gray.

In my memoir in the Wagner Institute Transactions I adopted the name *Fulgur* in preference to the earlier name of Bolten, because the latter was published without a diagnosis, but as it has been since

definitely established that a diagnosis is not essential for the validity of a generic name provided other conditions are fulfilled, I have accepted the ruling of the International Committee, and adopt *Busycon*.

BUSYCON (SPINIGER var.?) TAMPAENSE DALL.

Plate 10, fig. 5.

Fulgur spiniger var. *tampaense* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 111, 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; Shepard, Heilprin, Willcox, Dall, and Burns. U. S. Nat. Mus. No. 165075.

This is the common species of the silex beds though usually collected in an immature state, the adults appearing only as fragments. It is without doubt derived from the Vicksburgian *B. spiniger* of Conrad.

BUSYCON SPINIGER var. NODULATUM Conrad.

Plate 9, fig. 5.

Fulgur nodulatum CONRAD, Journ. Acad. Nat. Sci. Phila., ser. 2, vol. 1, p. 207, 1849; vol. 2, p. 41, pl. 1, figs 6, 7; Proc. Acad. Nat. Sci. Phila., vol. 6, p. 317, 1854.

Fulgur nodulatus GILL, Amer. Journ. Conch., vol. 3, p. 147, 1887.

Busycon (Sycopsis) nodulatum CONRAD, Amer. Journ. Conch., vol. 3, p. 184, 1887.

Fulgur spiniger var. *nodulatum* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 110, 1890.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay, Florida; and of the marl of the Chipola River, West Florida. Burns and Dall. U. S. Nat. Mus. No. 165076.

BUSYCON SPINIGER var. PERIZONATUM DALL.

Fulgur spiniger var. *perizonatum* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 111, 1890.

Fulgur coronatum HEILPRIN, Trans. Wagner Inst., vol. 1, p. 108, 1887, not of Conrad, Bull. Nat. Inst., p. 187, 1849.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; rare. Heilprin, Burns. U. S. N. Mus. No. 112126.

BUSYCON STELLATUM DALL.

Plate 10, figs. 7, 9.

Fulgur stellatum, DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 114, pl. 4, fig. 9, 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; rare; Dall. U. S. Nat. Mus. No. 165074.

Additional material of this beautiful species has been obtained since the original publication, fully confirming the diagnosis of its characters.

Genus **MELONGENA** Schumacher.

Galeodes BOLTEN, Mus. Bolt., p. 53. 1798. Type, *Murex melongena* (Linnaeus), Gmelin. Not *Galeodes* Olivier, 1791. *Arachnida*.

Melongena SCHUMACHER, Essai, p. 212, 1817. Type, *Murex melongena* Linnaeus.

Pyrula (sp.) LAMARCK, *et auct. altis*.

MELONGENA SCULPTURATA Dall.

Plate 11, fig. 1.

Melongena sculpturata DALL, Trans. Wagner Inst., vol. 3, pt. 1, 118, pl. 8, fig. 3 (var.), 1890.

Oligocene of the Tampa silex beds at Ballast Point, of the overlying "Cerithium rock" of Heilprin at the same locality and in other adjacent localities, and in the marl of the Chipola River, near the county bridge, formerly Bailey's Ferry. Dall, Burns, and others. U. S. Nat. Mus. No. 114543.

The typical form is most common in the "Cerithium rock," the following variety more so in the silex beds underlying the former.

MELONGENA SCULPTURATA var. **TURRICULA** Dall.

Plate 8, fig. 7.

Melongena sculpturata var. *turricula* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 119, pl. 8, fig. 3, 1890.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Burns and Dall. U. S. Nat. Mus. No. 112045.

The specimen noted in the Transactions as from the Miocene of South Carolina, is of somewhat dubious extraction and may be the immature stage of another species.

Genus **SOLENOSTEIRA** Dall.

Solenosteira DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 122, 1890. Type, *Pyrula anomala* Reeve, Conch. Icon. *Pyrula*, pl. 8, fig. 12, 1847.

SOLENOSTEIRA INORNATA Dall.

Solenosteira inornata DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 123, 1890; pt. 2, p. 234, pl. 20, fig. 17, 1892.

Oligocene limestone at Ballast Point, Tampa Bay, Florida, from the "Cerithium rock" of Heilprin, immediately over the silex horizon, and from the bed of the Hillsboro River above Tampa. U. S. Nat. Mus. No. 112050.

The figure above cited was made from gutta percha casts taken from the molds of the species in the lime rock.

Family COLUBRARIIDAE.

Genus CANTHARUS Bolten.

Cantharus BOLTEN, Mus. Boltenianum, p. 132, 1798, First species, *Buccinum tranquebaricum* Gmelin.

Tritonidea SWAINSON, 1840.

CANTHARUS PAUPER Dall.

Plate 7, fig. 5; plate 10, fig. 12.

Tritonidea pauper DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 129, pl. 4, fig. 8c, 1890.

Tampa silex beds, Dall and Post. U. S. Nat. Mus. No. 165079.

This pretty little species belongs to the group of *C. orbigny* Payraudeau which occurs both in the Mediterranean and Floridian recent fauna, indicating a considerable antiquity for the race.

Genus PHOS Montfort.

Phos MONTFORT, Conchyl. Syst., vol. 2, p. 494, 1819. Sole example, *Murex senticosus* (Linnaeus) Gmelin.

Muricidea SWAINSON (sp.) Mal., p. 294, 1840.

PHOS, sp. indet.

An indeterminable species of *Phos* was collected from the Tampa silex beds at Ballast Point by the late Frank Burns. Since then, Mr. E. J. Post, of Tampa, has obtained imperfect specimens of a different species. Unfortunately neither of them is in a sufficiently perfect state to make it advisable to describe it.

Family ALECTRIONIDAE.

Genus ALECTRION Montfort.

Alectrion MONTFORT, Conch. Syst., vol. 2, 1810, p. 565. Monotype, *Buccinum papillosum* Linnaeus.

Nassa LAMARCK, Prodrôme, 1799, p. 71. Monotype, *Buccinum mutabile* Linnaeus. Not *Nassa* Bolten, 1798.

Tritonella A. ADAMS, 1853; not of Swainson, 1840.

Alectrion DALL, Bull. Mus. Comp. Zool., vol. 43, No. 6, 1908, p. 306.

ALECTRION URSULA, new species.

Plate 12, fig. 13.

Shell small, fusiform, strongly sculptured, with about 5 whorls, the apex of the spire defective in the specimen; suture appressed. distinct; nucleus lost; subsequent whorls axially sculptured with (on the last whorl 10) rounded ribs, with wider interspaces, extending from suture to suture and, on the last whorl to the canal,

incremental lines inconspicuous; spiral sculpture of (on the spire 3, on the last whorl 9) strong spiral, equal and equidistant spiral threads, with wider interspaces, and slightly swollen where they override the ribs; between these, in the interspaces, are two or more extremely fine intercalary threads, or striae; aperture sublunate; outer lip (in the specimen) thin, simple; body not callous; pillar short, keeled at the edge of the short canal; siphonal fasciole inconspicuous with no marked constriction behind it. Length 7.5, maximum diameter 4 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 165081.

This specimen may not be quite mature. It appears from its sculpture to be a member of the group to which *Nassa acuta* Conrad belongs.

ALECTRION ETHELINDA, new species.

Plate 13, fig. 17.

Shell small, subturritid, thin, of about 5½ whorls separated by a deep but not channeled suture; whorls prominently rounded, the shoulder marked and situated not far in front of the suture; nucleus of about one whorl, smooth and subglobular; subsequent whorls sculptured; axial sculpture of (on the last whorl 10) narrow rounded ribs, extending from the suture to the siphonal fasciole, with subequal much wider interspaces; spiral sculpture of very numerous fine equal threads, with equal or somewhat narrower interspaces, covering evenly the whole surface of the whorls, overriding but not nodulating the ribs; aperture semilunate, the outer lip sharp edged, faintly varicose, internally smooth in the type-specimen which may not be quite mature, and would possibly have developed lirae later; inner lip short, straight; canal short, deep, with a strong spirally striate siphonal fasciole, keeled behind, with a deep constriction behind the keel; body, in the type-specimen, without callus, which might have been supplied in the fully adult shell. Height of shell 11.2, of last whorl 7.5, maximum diameter 6.2 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

One specimen from the Post collection, U. S. Nat. Mus. No. 165080.

ALECTRION GARDNERAE, new species.

Shell short, stout, inflated, acute, with five rapidly increasing whorls; nucleus smooth, minute; subsequent whorls with (on the last whorl 8) stout ribs most prominent on the periphery and fainter toward the suture and the base; these are overrun by numerous strong subcarinated threads with on the later whorls a much finer inter-

calary thread frequently intervening: final varix strong, the body without callus, the outer lip with small denticles internally, siphonal fasciole feeble, canal (defective), aperture large, obovate. Height 16, of last whorl 11, maximum diameter 11.3 mm.

Tampa silex beds, collected by E. J. Post, but received too late for figuring. U. S. Nat. Mus. No. 214737.

This species belongs to the group of *A. verrucosus* C. B. Adams, of the Pacific coast recent fauna. It is named in honor of Miss Julia Gardner, of the Johns Hopkins University, whose work in paleontology of our Tertiary has been praiseworthy.

Family COLUMBELLIDAE.

Genus COLUMBELLA Lamarck.

Columbella LAMARCK, Prodrôme, 1799, p. 70. Monotype, *Voluts mercatoris* Linnaeus.

Columbella LAMARCK, AN. & Vert., vol. 7, p. 292, 1822.

The genus *Pyrene* Bolten, proposed in 1798, for *Buccinum punctatum* Bruguière (*semipunctatum* Lamarck) is sufficiently distinct from the true Columbellas to be regarded, as by the brothers Adams, as a distinct genus, although it has sometimes been held to preoccupy the name of the Lamarckian genus.

Subgenus ANACHIS H. and A. Adams.

Anachis H. and ADAMS, Gen. Rec. Moll., vol. 1, p. 184, 1853: no type selected.—DALL, Proc. Boston Soc. Nat. Hist., vol. 13, 1870, p. 242. Sole species, *A. crura* Say.

ANACHIS EUTHERIA, new species.

Plate 12, fig. 11.

Shell small, slender, attenuated, with a minute blunt tip of 2 smooth, inflated whorls, and about $6\frac{1}{2}$ subsequent reticulately sculptured whorls; suture well defined, but not appressed or channeled; sculpture of, on the penultimate whorl, about 16 rather sharp, uniform, axially directed lamellae, slightly concavely flexuous on the later whorls, and passing from the suture over the whole whorl to the canal without enlargement or nodulation; these are crossed between the sutures by 4 or 5, and on the last whorl by 13 narrow, equal revolving threads, flat-topped, and about equal to the lamellae on the spire; dividing the surface into rather deep rectangular reticulations; on the last whorl the lamellae assume the form of narrow ribs; there are a few spiral smaller threads on the short canal; aperture narrow, pointed behind, with a short, wide canal in front; pillar smooth, not callous, the anterior portion slightly twisted; outer lip

(not fully mature ?) thin, sharp, slightly arcuate behind. Length of shell 9 mm.; of last whorl 5 mm.; maximum diameter 3 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

One specimen from the Post collection, U. S. Nat. Mus. 165084.

Subgenus *ASTYRIS* H. and A. Adams.

Astyris H. and A. ADAMS, Gen. Rec. Moll., vol. 1, p. 187, 1853; not selected.—DALL, Proc. Boston, Soc. Nat. Hist., vol. 13, 1870, p. 1. *A. rosacea* (Gould as *Buccinum*).

The group *Alia* H. and A. Adams sometimes united with this bright colored shells and seems sufficiently distinct to preserve names.

ASTYRIS TURGIDULA Dall.

Plate 15, fig. 6.

Astyris turgidula DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1193, p. fig. 12^b, 1900.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; and Post. U. S. Nat. Mus. No. 130350, and 214439 (adult).

The specimen figured lacks the thickened outer lip. A later sample retains it.

ASTYRIS ELUTHERA, new species.

Plate 12, fig. 12.

Shell small, slender, subacute, smooth, with about 7 whorls; apical whorl small, inflated, rounded; suture distinct but not deep; subsequent whorls moderately convex, gradually and uniformly increasing in size, smooth, and without sculpture, except the last, which has a small swollen varix behind the posterior part of the outer lip, on the canal half a dozen fine, sharp spiral grooves with somewhat wider flattened interspaces; outer lip (defective) slightly thickened, the posterior part remaining shows one internal liration and doubtless anteriorly there were others; body with a slight callus with edge free anteriorly; pillar short, obliquely truncate in front, straight. Length of shell 8, of last whorl 5.7, maximum diameter 3 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

One specimen from the Post collection, U. S. Nat. Mus. No. 163

ASTYRIS DICARIA, new species.

Plate 4, fig. 2.

Shell very small, smooth, short, with somewhat more than 5 whorls; suture very distinct, the whorls between moderately convex, the last whorl much the largest, base attenuately rounded; aperture

only lunate, the outer lip slightly protractively arcuate, simple; inner lip smooth; canal short, wide, slightly recurved; aperture obstructed by matrix, so that the existence of lirae on either lip is doubtful. Height of shell 4.3, of last whorl 3, maximum diameter 2 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 165063.

ASTYRIS ACANTHODES, new species.

Plate 4, fig. 4.

Shell small, acute, of about 6 whorls regularly increasing; suture distinct; surface smooth except for 4 or 5 minute spiral grooves on the canal; whorls not inflated; outer lip thickened with 6 or 7 low denticles internally; body and pillar with a smooth, thin layer of callus, canal very short and deeply notched. Height of shell 6, of aperture 2, maximum diameter 2.5 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; one specimen. U. S. Nat. Mus. No. 166100.

This little shell is almost identical with one which we have without a name in the collection of the United States National Museum from the Natural Well, Duplin County, North Carolina, of Miocene age.

Family MURICIDAE.

Genus MUREX (Linnaeus) Bolten.

Murex LINNAEUS, Syst., Nat., ed. 10, p. 746, 1758. First species, *M. haustellum* Linnaeus.—BOLTEN, Mus. Boltinianum, p. 144, 1798. First species, *M. haustellum* Linnaeus.

All Bolten's species of *Murex* belong to the group as commonly restricted.

Subgenus MUREX sensu stricto.

Type.—*Murex haustellum* Linnaeus.

MUREX MISSISSIPPIENSIS Conrad.

Plate 5, fig. 10.

Murex mississippiensis CONRAD, Journ. Acad. Nat. Sci. Phila., series 2, vol. 1, p. 116, pl. 11, fig. 30, 1848.—DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 139, 1890.

Murex tritonopsis HEILPRIN, Trans. Wagner Inst., vol. 1, p. 107, pl. 15, fig. 39, 1887.

Oligocene of Vicksburg, Mississippi, Conrad; of the Tampa silex beds, Heilprin and Dall; and of the Chipola marls near the county bridge over the Chipola river, formerly Bailey's Ferry, Florida, Dall. U. S. Nat. Mus. No. 166102 and 168065.

MUREX (CHRYSTOSTOMA var.?) CHIPOLANUS Dall.

Murex chrysostoma GRAY, var. *chipolana* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 139.

Oligocene of the Chipola marl, at the county bridge over the Chipola River, Calhoun county, and, possibly, of the Tampa silex beds at Ballast Point, Tampa, Florida. U. S. Nat. Mus. No. 165086.

The specimens differ from the typical recent *M. chrysostoma* in being smaller, with a somewhat shorter canal, from which the antecedent canal tends to divaricate, while in the typical *chrysostoma* it is usually continuous. The anterior margin of the varices in the fossil also tends to be more spinose, having the projecting points more produced than in the recent shell, though similar in number and situation.

MUREX SEXANGULA, new species.

Plate 13, fig. 11.

Shell small, stout, rather short, with about 6 whorls of which the nuclear one and a half are smooth and rounded, the subsequent whorls subtabulate, with 6 well-developed varices; suture deep, distinct; whorls rather abruptly shouldered, but not keeled; varices continuous and somewhat retractive, the line ascending the spire making about a quarter turn; spiral sculpture of about five rounded ridges, one behind the shoulder, subequally spaced, the two near the periphery closest, which are most prominent on the back of the varices and obsolete in the spaces between the varices; besides these there are numerous spiral grooves with wider, flattened interspaces which cover the whole surface and end in minor crenulations on the recurved edges of the varices; axial sculpture only of incremental lines and the varices, which are thick, recurved, longitudinally striate in front, finely crenulate at the recurved edge, with about five projections corresponding to the ends of the spiral ridges, of which the most prominent is at the shoulder; aperture rounded, the outer lip with six or eight feeble lirations internally; inner lip smooth, continuous, partly free from the body whorl, canal rather wide, open, with a strong siphonal fasciole; a very narrow umbilical chink present. Length of shell (canal slightly defective) 22, of aperture 6.5, maximum diameter 14 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

One specimen from the Post collection, U. S. Nat. Mus. No. 165086.

MUREX TROPHONIFORMIS Heilprin.

Plate 9, fig. 7.

Murex trophoniformis HEILPRIN, Trans. Wagner Inst., vol. 1, p. 107, pl. 15, fig. 40, 1887.—DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 140, 1890.

Tampa silex beds, Heilprin and Post; Chipola marl, at the county bridge, formerly Bailey's Ferry, Chipola river, Florida, Dall. U. S. Nat. Mus. Nos. 115771 and 214440.

Genus CHICOREUS Montfort.

Chicoreus MONTFORT, Conch. Syst., vol. 1, 1810, p. 611. Type, *Murex ramosus* Linnaeus.

CHICOREUS LARVAECOSTA Heilprin.

Murex larvaecosta HEILPRIN, Trans. Wagner Inst., vol. 1, p. 106, pl. 15, fig. 37, 1887.—DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 140, 1890.

Tampa silex beds at Ballast Point Tampa Bay, Florida; rare; Heilprin and Post. U. S. Nat. Mus. No. 165087.

CHICOREUS CRISPANGULA Heilprin.

Plate 5, fig. 14.

Murex crispangula HEILPRIN, Trans. Wagner Inst., vol. 1, p. 107, pl. 15, fig. 38, 1887.

Murex (Chicoreus) crispangula DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 140, 1890.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; two specimens, Heilprin and Post. U. S. Nat. Mus. No. 214442.

This is related to *M. larvaecosta*, having the same number of varices, but is less prominent and angular at the shoulder.

CHICOREUS BURNSII Whitfield.

Murex shilohensis var. *burnsii* (Whitfield Ms.) DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 141, 1890.—WHITFIELD, Miocene Gastr. N. J., p. 98, pl. 17, fig. 2, 1894.

Oligocene of the Tertiary marls at Shiloh, New Jersey, Whitfield; Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 112065.

Genus PURPURA Martyn.

Purpura MARTYN, Univ. Conch., vol. 2, table, pl. 66, fig. 1, 1784. Sole example, *Purpura foliata* Martyn.

Cerostoma CONRAD, 1837, not of Latreille, 1802.

Pterorhysis CONRAD, Proc. Acad. Nat. Sci. Philadelphia for 1862, p. 560.

Type, *Murex umbrifer* Conrad, Tert. Foss., 1832, p. 17, pl. 3, fig. 1.—

DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 143, 1890.

Not *Purpura* LAMARCK, Prodrôme, p. 71, 1799 (*P. persica* Linnaeus).

Purpura DALL, Proc. Biol. Soc. Wash., vol. 18, p. 189, 1905; Proc. U. S. N. Mus., vol. 29, p. 427, 1905; U. S. Geol. Survey, Prof. Paper 59, p. 45, 1909.

I have fully demonstrated in the publications above referred to the necessity of returning to the usage of the ancients who applied the name *Purpura* especially to certain purpuriferous muricoid shells, a practice Lamarck was the first to violate.

The typical *Purpura* has a small projecting spur or tooth, projecting from the anterior part of the outer lip, and most of the species are shore or shallow-water denizens. But there is a very closely allied group which lives in deeper water and is without the tooth, and has as a rule more delicate shells. For these out of a host of synonyms I selected in 1889, the name *Pteropurpura* Jousseaume.

Subgenus **PTEROPURPURA** Jousseaume.

Pteropurpura JOUSSEAUME, Rev. de Zool. for 1879 (1880). Type, *Murex macropterus* Deshayes.—FISCHER, Man. de conchyl., p. 641, 1884.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, 1892, p. 242; pt. 5, 1900, p. 1199.

PURPURA (PTEROPURPURA) POSTI Dall.

Plate 7, fig. 9.

Pteropurpura posti DALL, Proc. U. S. Nat. Mus., vol. 18, p. 44, 1895; Trans. Wagner Inst., vol. 3, pt. 5, p. 1199, pl. 43, fig. 7, 1900.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; two specimens, E. J. Post. U. S. Nat. Mus., No. 130349.

The young specimens have an intercalary axial rib between the varices which might be taken for a varix in a hasty examination.

Genus **MURICIDEA** (Swainson) Mörch.

Muricidea (part) SWAINSON, Mal., pp. 67, 296, 1840.—MÖRCH, Yoldi Cat., p. 95, 1852. First species, *Murex hexagona* Lamarck.

Swainson's original group was heterogeneous, *Muricopsis* Bucquoy, Dautzenberg, and Dollfus, 1882, is synonymous.

MURICIDEA HEILPRINI Cossmann.

Plate 7, fig. 4.

Murex spinulosa HEILPRIN, Trans. Wagner Inst., vol. 1, p. 108, pl. 15, fig. 41, 1887; not of Deshayes.

Muricidea spinulosa DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 149, pl. 3, fig. 9, 1890.

Muricidea heilprini COSSMANN, Essais Pal., vol. 5, p. 34, Dec., 1903.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Heilprin, Post. U. S. Nat. Mus. No. 165089.

MURICIDEA, sp. indet.

Muricidea (sp. ind.) DALL, Trans. Wagner Inst., vol. 3, p. 149, 1890. (Cf. *M. cristata* Brocchi).

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Burns. This is evidently a *Muricidea* but too imperfect to determine specifically.

Genus TRITONALIA Fleming.

Tritonalia FLEMING, Hist. Brit. Anim., p. 167, 1828, in corrigenda. Type, *Murex erinaceus* Linnaeus.

Ocenebra (Leach Ms.) GRAY, Ann. Mag. Nat. Hist., vol. 20, 1847, p. 269; Proc. Zool. Soc. London, 1847, p. 133, No. 10.

Ocenebra H. and A. ADAMS, Gen. Rec. Moll., vol. 1, 1853, p. 74.—FISCHER, Man. de Conchyl., 1883, p. 642. Same type.

TRITONALIA SCABROSA, new species.

Plate 5, fig. 15.

Shell small, elevated, scabrous, of about 5 whorls beside the (decolate) nucleus; suture appressed, indistinct, flexuous; spire rather acute; axial sculpture of 7 rather stout rounded ribs extending from suture to canal, and of numerous more or less minutely scaly incremental lines covering the surface; spiral sculpture on the spire of 2 prominent duplex threads, slightly swollen where they cross the ribs and more or less minutely imbricate; on the body of the last whorl 5, and on the canal 3 similar spirals tending to become more or less spinose or bluntly pointed on the ribs at the shoulder; between these are numerous finer imbricate threads with wider interspaces; the whorl slopes to the shoulder from the suture; aperture with the outer lip thickened and crenulated by the spiral sculpture, internally with 5 short rather distant denticles; body and pillar with a thin wash of callus, the spiral sculpture on the canal under the enamel is perceptible; canal open, short, recurved. Height 22, height of aperture and canal 12.5, maximum diameter 12 mm.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus., No. 166101.

This might almost equally well be referred to *Muricidea*, but it has the surface of *Tritonalia*.

Genus TYPHIS Montfort.

Typhis MONTFORT, Conch. Syst., vol. 1, p. 615, 1810. Type, *Murex tubifer* Reissy.—DALL, Bull. Mus. Comp. Zool., vol. 18, 1889, p. 214.

TYPHIS SIPHONIFERA, new species.

Plate 13, fig. 9.

Shell small, short, stout-conic, of four whorls, of which the first is smooth and rounded, the others, rapidly enlarging, smooth, angulated by four varices, about midway between which, on a subangular shoulder of the whorl, intervene stout tubes slightly backwardly and apically directed, entire and with subcircular orifices, one tube being situated in each interspace; suture distinct, deep, the whorl in front of it to the shoulder subtabulate, the shoulder rounded

carinate, the whorl in front rapidly, flattishly attenuated; varices thin, recurved, between the shoulder and the canal with eight or nine crenulations, between which and the margin of the aperture the front of the varix is somewhat convex and smooth; aperture rounded-ovate, with an entire thin, projecting free margin; canal closed, short, stout, wide, slightly curved to the right and backward; siphonal fasciole with three projecting imbrications; the umbilical region deeply grooved, but not perforate. Length of shell 10.5, of last whorl 8, of the aperture 2.7, maximum diameter 6.5 mm.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida.

One specimen in the Post collection, U. S. Nat. Mus. No. 165090.

Genus CORALLIOPHILA Adams.

Coralliophila H. and A. ADAMS, Gen. Rec. Moll., vol. 1, p. 135, Sept. 1853.

No type mentioned; *Pyrula neritoidea* Lamarck, selected by Tryon.

CORALLIOPHILA MAGNA Dall.

Plate 7, fig. 7; plate 10, fig. 6.

Coralliophila magna DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 153, pl. II, figs. 11, 12, 1890.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; rather common, and reaching an unusual size for the genus. U. S. Nat. Mus. No. 165091.

Genus RAPANA Schumacher.

Rapana SCHUMACHER, Essai, p. 214, 1817. Type, *Pyrula bezoar* Lamarck.

RAPANA TAMPAËNSIS Dall.

Plate 13, fig. 8.

Rapana tampaënsis DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 153, 1890; pt. 2, p. 244, pl. 20, fig. 14 (var. ?), 1892.

Ecphora quadricostata var. MARTIN, Pal. Maryland, Miocene, 1904, p. 211. Not of Say, Jour. Acad. Nat. Sci., Phila., vol. 4, p. 127, Nov. 1824 (as *Fusus*).

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Dall and Post. U. S. Nat. Mus. No. 165096.

The reception of several perfectly preserved specimens enables me to give a satisfactory figure of this pretty little species. The form figured on plate 20 of the Wagner Memoir as a possible variety, from Church Hill, Maryland,¹ is probably a different species, which might be called *Rapana ecclesiastica*. The reference to *Ecphora* is mitigated by the imperfect condition of my original specimens.

¹ Martin, Paleontology Maryland, 1904, pl. 52, fig. 9.

There is more or less variation in the amplitude of the umbilicus. *Phora quadricostata* is unknown from the Oligocene.

RAPANA BICONICA, new species.

Plate 13, fig. 10.

Shell heavy, solid, biconic, of 5 or 6 whorls (the nucleus defective in the specimen); spire less than half as long as the aperture, short conic with flattish slopes; suture distinct, on the early whorls a little undulated as if by obsolete ribs; axial sculpture chiefly of rather prominent incremental lines, which give a rough feel to the surface; spiral sculpture of a well-marked carina at the periphery and between the sutures about 10 revolving threads, of which the anterior half are rather smaller than the others; in front of the periphery of the last whorl are 4 more flattened cords separated by narrow grooves and mostly with a smaller groove dividing the flattened surface of the cord; in front of these are 10 or 12 wider straplike revolving ridges, of which the surface is divided usually by two smaller grooves and which extend to the canal; aperture subquadrate; outer lip thin, sharp, crenulate by the spiral sculpture; body with the sculpture erased; pillar smooth, slightly twisted; siphonal fasciole strong with a deep chink between it and the anteriorly reflected pillar; canal wide, rather long, and a little recurved. Height of shell 51, of aperture 32, maximum diameter of shell 25 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. E. J. Post, U. S. Nat. Mus., No. 165092.

Family EULIMIDAE.

Genus MELANELLA Bowdich.

Melanella BOWDICH, Elem. Conch., vol. 1, p. 27, 1822, type, *M. dufrenoyi* Bowdich, Elem. Conch., vol. 1, pl. 6, fig. 17.—DALL, Rep. Blake Gastr. Bull. Mus. Comp. Zool., vol. 18, p. 326, June, 1889.—FISCHER, Journ. de Conchyl., vol. 25, 1887, p. 197. Not *Melanella* Bory St. Vincent, 1824, Swainson, 1840, or Morch 1852.

Eulima RISSO, Hist. Nat. Eur. MÉR., vol. 4, 1826, p. 123; first species, *E. elegantissima* RISSO (= *Turbo politus* Gmelin, fide Jeffreys); only figured species *E. subulata* Brocchi, 1814, which is a fossil extremely close to *Turbo subulata* Donovan, 1804.

Helix (Leach MS. 1819) GRAY, Ann. Mag. Nat. Hist., vol. 20, 1847, p. 271. First species, *Helix polita* Montagu (as *B. montagui* Leach); Proc. Zool. Soc. London, 1847, p. 160, example named by Gray, "*Helix subulata*."

Leiostraca H. and A. ADAMS, Gen. Rec. Moll., vol. 1, 1853, p. 237. Type, *L. metcalfei* A. Adams. Gen. Rec. Moll., vol. 3, pl. 25, fig. 3a. Not *Leiostracus* Albers, 1850, nor *Leiostracus* Martens, 1860.

Vitreolina MONTEROSATO, Nom. Conch. Medit., 1884, p. 100. Type, *E. distorta* Jeffreys, not Deshayes. (Section of *Eulima*.)

Acicularia MONTEROSATO, Nom. Conch. Medit., 1884, p. 102. Type, *Eulima beryllina* Monterosato. (Section of *Eulima*.) Not *Acicularia* Adams, 1875.

Subularia MONTEROSATO, Nom. Conch. Medit., 1884, p. 103. New name for *Liostraca* H. and A. Adams.

Haliella MONTEROSATO, Bol. Malac. Ital., 1880, p. 74. Type, *Eulima stenostoma* Jeffreys. Not *Haliella* Ulrich, 1891.

Melanella and *Eulima* DALL, Bull. Mus. Comp. Zool., vol. 18, 1889, p. 323.

Melanella proposed by Bowdich four years earlier than *Eulima* should, as pointed out by Fischer in 1887, be accepted as the generic name of this genus as originally conceived. However, in dividing the genus into groups, it is still possible to retain the familiar name of *Eulima*, as indicated by me. The researches of my colleague, Dr. Paul Bartsch, have shown that the groups in this genus are difficult to separate sharply by the shell; the absence of characters except of the most simple kind is, one may say, characteristic of the shells of the genus.

The anatomical relations are hardly more satisfactory. Since these animals are found even at great depths, as well as between tides, and comprise both free-living species and those which are commensal or even truly parasitic, they are subject especially to the direct action of the environment, including degenerations due to disuse of organs.

Rosen has found *Eulima polita*, a large free species, to be possessed of a radula "mit zahlreichen Zähnen." This species also has eyes situated behind the tentacles, and a well developed operculum. *Eulima distorta*, however, a parasitic species, is without a radula, living on the juices of its host. The former is opaque and (for the genus) heavy; the latter, as its situs requires, is smaller, pellucid, and thin. It is well known that deep-sea shells lose weight and color, and frequently their optical organs; *Eulima stenostoma* Jeffreys lives in 75 to 410 fathoms, and has the aspect of shallow-water species, which bear color markings. It is, however, colorless and blind. The peculiar tortuosity of the spire characteristic of typical *Melanella* is found in all degrees of emphasis, some specimens of the same species being absolutely straight axially and others more or less tortuous, contrary to the opinion I had formed from insufficient material in 1889. It is, therefore, evident that this character can not be used to divide groups. The acuteness of the apex varies in different species, and the position of the varices, with relation to each other, in the same species is not constant; nor, Doctor Bartsch assures me, does the presence of internal projections due to the

varices (a character used by Monterosato) preserve constancy. It is, therefore, evidently a difficult task to divide the genus naturally.

Risso named no type, but the only species figured by him belongs to the group afterwards called *Leiostraca* by H. and A. Adams. *Melanella* Bowdich is monotypical; the species named by him *M. dufresnii* is supposed to be that later called *Eulima major* Sowerby. *Eulima polita* Risso's first species is a *Melanella*, and a type must therefore be selected from among the others, and his figured species *E. subulata* Brocchi (and probably also of Donovan, 1804) is the most appropriate.

A tentative arrangement follows:

Genus MELANELLA Bowdich, 1822.

Type of the genus—*Melanella dufresnii* Bowdich.

Shell white or colorless, usually solid, free living, with an ovoid operculum with a small, partly spiral nucleus, the aperture holotomate when adult, the whorls nearly or quite flat-sided, the suture, appressed, the pillar and peristome simple and slightly thickened. Animal with slender tentacles, the eyes sessile behind or slightly outside the tentacular bases, with no epipodial lobes; a radula present; the anterior margin of the foot double and squarely truncate; the sexes separated. The parasitic and commensal species often with certain organs degenerate, absent, or specially modified to suit their mode of life.

Subgenus MELANELLA sensu strictu.

Characters as above stated, *Balcis* Gray, *Vitreolina* Monterosato, and *Acicularia* Monterosato (1884, not *Acicularia* Adams, 1875) are synonymous.

Subgenus EULIMA Risso, 1826.

Type.—*Turbo subulata* Brocchi.

Shell usually with colored bands or streaks, thin pellucid, straight, the whorls axially wider than in *Melanella*, acute, slender, the pillar straight, the outer lip sharp, simple, the aperture elongate oval. Animal and operculum much as in *Melanella*.

Leiostraca H. and A. Adams, 1853, in part; *Subularia* Monterosato, 1884, in part; and *Eulima* (sp.) of Authors, are synonymous.

Section HALIELLA Monterosato, 1880.

Type.—*Eulima stenostoma* Jeffreys.

Shell resembling *Eulima* s. s. (in the typical species colorless) but with the columella distinctly twisted. The animal in the typical species is blind.

Section EULIMARIA Murchisoni, 1894.

Type.—*Leiostraca metcalfei* A. Adams.

Shell short spired, with color markings, pellucid, markedly compressed, with the varices continuous on each side, as in *Bursa*, the spire hardly acute and the last whorl larger in proportion than in typical *Eulima*.

This is the type of Adams's genus and so far the only species known of it. *Hoplopteron* Fischer may present an extreme development of this compression and lateral expansion. *Iopeis* Gabb, from an examination of the type, proves to be an immature smooth *Rissoina*, although it has been referred to the Eulimidae.

There is a number of named groups which have been associated with this family, but of which I have been unable to study authentic specimens and therefore can not attempt to express an opinion about them. Doctor Bartsch has observed that there is a certain number of species of *Melanella* which, when immature, have a marked keel at the periphery of the last whorl, and even show some traces of angulation on the last whorl of the adult. This verges by almost imperceptible gradations into the evenly rounded species, and, while as a group it is perceptible, can hardly rank higher than a section, if, indeed, worthy of a name at all. *Subeulima* Souverbie may have been proposed for the most conspicuous development of this feature, if it is not the tip of a Vermetid.

MELANELLA CONOIDEA Kurtz and Stimpson.

Plate 3, fig. 13.

Eulima conoidea KURTZ and STIMPSON, Proc. Boston Soc. Nat. Hist., vol. 4, p. 115, 1851.—KURTZ, Cat. South Carolina Mar. Sh., p. 8, 1860.—DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 159, pl. 5, fig. 11, 1890.

Odotostoma alba CALKINS, Davenport Acad. Sci., 1878, p. 220, pl. 8, fig. 3 (from type).

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay, Florida. Pliocene of South Carolina and southern Florida; Pleistocene of the Carolinas; living from North Carolina to the Florida Keys, in shallow water. U. S. Nat. Mus. No. 112191.

EULIMA BOWDICHII, new species.

Plate 12, fig. 14.

Shell small, smooth, conic, with $5\frac{1}{2}$ remaining and probably 7 or more original whorls; suture not strongly marked; the only sculpture consists of a few axial impressed lines indicating resting stages which are probably more or less variable in number and position;

whorls slightly convex; aperture sublunate; outer lip protractively arcuate, passing insensibly into the columellar lip, which is thickened, prominent, and with a slight depression behind it. Length of $5\frac{1}{2}$ decollate whorls 7.5, of last whorl 4, maximum diameter 3 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. One specimen from the Post collection, U. S. Nat. Mus. No. 165093.

Family PYRAMIDELLIDAE.

Genus PYRAMIDELLA Lamarck.

Pyramidella LAMARCK, Prodrôme, p. 76, 1799. Monotype, *Trochus dolabratus* Linnaeus.

Obeliscus ANONYMOUS, Mus. Calonnianum, p. 24, 1797. First species, *Voluta dolabrata* Solander, manuscript.

Obeliscus is proposed in an anonymous work which is rejected as an authority for nomenclature by the International Commission on Nomenclature, there is no diagnosis or figure, and the two species mentioned are manuscript names. We need not therefore concern ourselves with the name *Obeliscus* in any event.

Subgenus LONGCHAEUS Mörch.

Longchæus MÖRCH, Malak. Blatt, vol. 20, 1875, p. 158. Type, *Pyramidella punctata* Schubert and Wagner.—DALL and BARTSCH, Mon. W. Amer. Pyr., Bull. U. S. Nat. Mus., No. 68, p. 21, 1909.

PYRAMIDELLA (LONGCHAEUS) CRENULATA Holmes.

Plate 13, fig. 4.

Obeliscus crenulatus HOLMES, Post. Plioc. fos. S. Car., p. 88, pl. 13, figs. 14, 14^a, 1890.

Jacksonian Eocene to Recent. Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 165164.

This species appears without perceptible change in different horizons from that of the Jackson up to the Pleistocene and is found living in moderate depths of water from the West Indies northward to South Carolina.

Genus TURBONILLA Risso.

Turbonilla RISSO, Hist. Nat. Eur. Mer., vol. 4, 1826, p. 224. Type, *Turbonilla plicata* Risso, 1826 (not Brocchi, 1814). *T. typica* Dall and Bartsch, Bull. U. S. Nat. Mus. No. 68, pp. 28, 29, 1909.

Subgenus PTYCHEULIMELLA Sacco.

Ptycheulimella SACCO, Moll. Piem. e. della Liguria, pt. 11, 1892, p. 59. Type, *Tornatella pyramidata* Deshayes.

TURBONILLA (PTYCHEULIMELLA) ETHELLINA, new species.

Plate 12, fig. 20.

Shell minute, slender, smooth, with 6 or more whorls (apex decolate) regularly increasing; whorls of the spire flattened with the suture wound a little in front of the periphery, giving a beveled aspect to the anterior edge of the whorl; base rounded, imperforate; aperture rounded-quadrate; pillar thin, straight (plicate?); outer lip rather straight, thin, entire; anterior margin rounded. Height of last five whorls 3.5 mm., maximum diameter of last whorl 1 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. One specimen in the Post collection, U. S. Nat. Mus. No. 165094.

Under the microscope faint indications of axial ribs appear. The aperture is filled with matrix, obscuring the plait if any exists.

Genus ODOSTOMIA Fleming.

ODOSTOMIA (MENESTHO) IMPRESSA Say.

Odostomia (Menestho) impressa (Say) BARTSCH, Proc. Boston Soc. Nat. History, vol. 34, p. 103, pl. 13, fig. 51, 1900.

Tampa silex beds, one specimen; E. J. Post. U. S. Nat. Mus. No. 214739.

Though not quite mature this specimen seems to differ in no respect from the recent shell.

Family CYPRAEDAE.

Genus CYPRAEA Linnaeus.

Cypraea LINNAEUS, Syst. Nat., ed. 10, p. 718, 1758.

CYPRAEA TUMULUS Heilprin.

Plate 3, figs. 1, 12.

Cypraea tumulus HEILPRIN, Trans. Wagner Inst., vol. 1, p. 111, pl. 16, figs. 49, 49*, 1887.

Cypraea pinguis CONRAD, in Walles' Geol. Miss., p. 289, pl. 17, figs. 3*, 3*, 1854; Proc. Acad. Nat. Sci. Phila., vol. 7, p. 262, 1855; not of Recluz, 1827.

Cypraea ventripotens COSSMANN, Essais Pal., vol. 5, p. 161, 1903.

Jacksonian Eocene of Creole Bluff, Grant Parish, Louisiana (L. C. Johnson); Jackson, Mississippi (Wailes); Oligocene of White Beach, Little Sarasota Bay, and of the Tampa silex beds at Ballast Point, Tampa Bay, Florida. Its presence in the Miocene of North Carolina is very doubtful.

M. Cossmann proposed a new name for Conrad's species which was preoccupied by Bonelli, but Heilprin's name has sixteen years' priority. No name should be substituted for a preoccupied name without a previous examination of the history of the species to see if there is not already an available synonym.

CYPRAEA HEILPRINII Dall.

Plate 3, figs. 2, 14.

Cypraea heilprinii DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 163, pl. 11, figs. 2, 2^a, 1890.

Oligocene (Nummulitic) of Ocala, Florida, and at Ballast Point in the silex beds and overlying "orbitolite bed," Tampa Bay, Florida. U. S. Nat. Mus. No. 112073.

CYPRAEA BALLISTA, new species.

Plate 6, figs. 9, 10, 11.

Shell small, pyriform, with a slight dimple over the spire, the sides of the base somewhat expanded by callus; aperture rather wide flexuous, with (on the right side 25 and on the opposite side about 10) sharp-edged lirae or denticulations, which do not extend over the base, but on the left side pass deeply into the aperture; these are separated by interspaces of greater width which on the right side are somewhat excavated, on the left side rather less so; posterior sinus curved upward, anterior sinus direct. Length 27, maximum width 19, height 16 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 165098.

This form is more attenuated behind and has a flatter base, wider aperture behind, less adjacent teeth, and the anterior sinus less recurved and smaller than in *C. heilprinii*. *C. tumulus* has the teeth closer together, the base not expanded, and the aperture less flexuous. It is also consistently smaller than *C. ballista*.

Family CASSIDIDAE.

Genus MORUM Boltén.

Morum BOLTÉN, Mus. Bolt., p. 53, 1798. Sole example, *Strombus oniscus* Gmelin.—DALL, Prof. Paper No. 59, U. S. Geol. Survey, p. 67, 1909.

Section HERCULEA Hanley.

Herculea HANLEY, in H. and A. Adams, Gen. Rec. Moll., vol. 2, p. 621, Nov., 1858.—DALL, Prof. paper No. 59, U. S. Geol. Survey, p. 68, 1909.

MORUM DOMINGENSE Sowerby.

Plate 12, fig. 28.

Oniscus domingensis SOWERBY, Quart. Journ. Geol. Soc., London, vol. 6, pt. 1, 1849, p. 47, pl. 10, fig. 3 (Santo Domingo).—HEILPRIN, Trans. Wagner Inst., vol. 1, p. 120, 1886.

Morum domingense GABB, Trans. Amer. Philos. Soc., vol. 15, p. 223, 1873.

Lamellidium domingense DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1567, 1908.

Morum (Herculea) domingense DALL, Prof. paper, No. 59, U. S. Geol. Survey, p. 69, 1909.

Oligocene of St. Domingo and Panama. Tampa silex beds at Ballast Point, Tampa Bay, Florida, U. S. Nat. Mus. No. 165095.

This species has the cancellate structure of *Oniscidia* and a deep recurved sulcus at the posterior end of the aperture. Its recent analogue appears to be *M. dennisoni* Reeve, of the lesser Antilles.

Family STROMBIDAE.

Genus ORTHAULAX Gabb.

Orthaulax GABB, Proc. Acad. Nat. Sci. Phila., vol. 24, p. 272, pl. 9, figs. 3, 4, 1872; Geol. St. Domingo, p. 274, 1873.—GUPPY, Quart. Journ. Geol. Soc. London, Nov. 1876, p. 520, pl. 28, fig. 8.—TAYLOR, Manual, vol. 2, p. 192, 1883.—DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 169, 1890.

Hippochrenes (part) ZITTEL, Tr. de. Paleont., vol. 2, p. 258, 1887.

Wagneria HEILPRIN, Trans. Wagner Inst., vol. 1, p. 105, pl. 15, figs. 36, 36a, 1887.

This genus is the most characteristic and typical of those belonging to the Middle Oligocene of our southern coastal plain and the Antilles, including Middle America. It does not appear in the Vicksburgian fauna or the Nummulitic Ocala beds of Florida; it seems to have become extinct before the development of the Oak Grove, Florida, fauna. So far it has been recognized in the Middle Oligocene of Santo Domingo, Cuba, Antigua, the Canal Zone of Panama, the Tampa silex beds, the Oligocene of Bainbridge, Georgia, and the lower bed at Alum Bluff, with its stratigraphically equivalent marl of the Chipola River, Florida. It is not known from the Bowden beds of Jamaica, which are doubtless younger than the Haitian Oligocene explored by Gabb, if indeed the latter be not divisible into several distinct horizons.

But the range in time appears so narrow and the genus so sharply characterized that, according to our present knowledge, the discovery of a species of *Orthaulax* in a Tertiary fauna may be taken as positive proof of its Middle Oligocene age.

The type of the genus is *O. inornatus* of Gabb, of which only immature specimens have been figured as above noted; a figure of the upper part of a mature individual is given herewith. No fully complete specimen has yet been collected of this species, but the form of either of the two other Florida species is well known, and they may be discriminated without the slightest difficulty.

ORTHAULAX INORNATUS Gabb.

Plate 11, fig. 4.

Orthaulax inornatus GABB, Proc. Acad. Nat. Sci. Phila., vol. 24, p. 272, pl. 9, figs. 3, 4, 1872.—GUPPY, Quart. Journ. Geol. Soc. London, Nov. 1876, p. 520, pl. 28, fig. 8.

Oligocene of Santo Domingo, Gabb (under the old appellation of "Miocene"); of the limestone at White Beach, Florida; and of

the Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 165099.

This is the typical species of the genus, distinguished by its long-ovate, elevated form, of which immature specimens have been figured by Gabb and Guppy.

ORTHAULAX PUGNAX Heilprin.

Plate 15, figs. 5, 10.

Wagneria pugnae HEILPRIN, Trans. Wagner Inst., vol. 1, p. 106, pl. 15, figs. 36, 36a, 1887.

Orthaulax pugnax DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 170, pl. 8, figs. 5, 8, 1890.

Middle Oligocene of the Tampa silex beds, at Ballast Point, Tampa Bay, Florida, Heilprin and Dall; also at Bainbridge, Georgia, the islands of Antigua and Cuba, and in the Canal Zone, Panama, MacDonald. U. S. Nat. Mus. No. 165100.

This is the commoner species of the silex beds, though usually badly broken, and can be discriminated from the other two Floridian species by its short, stout, and remarkably heavy shell. So far as yet known, it also has the widest geographical range.

ORTHAULAX GABBI Dall

Orthaulax gabbi DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 170, pl. 12, figs. 5, 5a, 5b, 1890.

Oligocene marl of the lower bed at Alum Bluff and the adjacent marl of the Chipola River, Florida. Burns and Dall.

I have included a reference to this species, though it is not known yet from the silex beds, for the sake of completeness and because it may at any time turn up in other Middle Oligocene beds. It is more strombiform than either of the other species and has been well figured. The species occur in large numbers at Alum Bluff, but the expanded outer lip is almost invariably defective.

Genus STROMBUS (Linnaeus) Lamarck.

Strombus LINNAEUS, Syst. Nat., ed. 10, p. 742, 1758.

Strombus LAMARCK, Prodrôme, p. 72, 1790. Sole example, *S. pugilis* Linnaeus.

STROMBUS CHIPOLANUS Dall

Plate 9, figs. 8, 10.

Strombus chipolanus DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 176, pl. 4, fig. 1, 1890; pt. 2, p. 263, pl. 13, figs. 1, 3, 1892.

Oligocene marls of the Chipola River, West Florida, and Tampa silex beds, Ballast Point, Tampa Bay, Florida. Dall and Burns. U. S. Nat. Mus. No. 112227.

This is a common species at Chipola, but so far only fragmentary at Ballast Point. The *S. albirupianus* Dall, from the White lime-

stone of Jacksonboro, Georgia, which was sent to me as Claibornian by the late Professor Whitfield has since been proved by Dr. T. Wayland Vaughan, of the United States Geological Survey, to be Oligocene in age.

STROMBUS LIOCYCLUS, new species.

Plate 13, figs. 6, 7.

Shell small for the genus, slender, with a rather narrowly attenuated spire, and 7 (or more) whorls; apex decollate in the specimen, having originally about two or three more turns than are preserved; whorls moderately convex and slightly shouldered; whole surface originally sculptured with minute, close-set, straight, axial threads; on the fourth whorl, counting backward from the aperture there are about 16 rounded riblets, which become obsolete toward the sutures and pass insensibly into the somewhat narrower interspaces; on the apical whorls, as in most species of this group of the genus, these riblets are narrower, closer and less prominent; and on the last half of the last whorl obsolete, there being about 7 on this whorl, mostly on the first half of it, the series in the type-specimen on this whorl being confined to the shoulder of the whorl; the upper whorls also show traces of faint, equal, revolving threads, three behind and six in front of the shoulder on the penultimate whorl; on the base of the last whorl there are also traces of half a dozen shallow rather distant spiral grooves, though the canal proper seems smooth; aperture narrow, produced and patulous behind; the outer lip straight, thickened, parallel with the inner lip, internally without lirae; ocular sulcus shallow, wide; canal short, wide, slightly recurved; inner lip smooth, somewhat callous. Length of shell 36.5, of last whorl 27.5, of aperture 24.5, maximum diameter 17.5 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. One specimen from the Post collection, U. S. Nat. Mus. No. 165101.

Superfamily CERITHIACEA.

Family CERITHIIDAE.

Genus BITTIUM Leach.

Bittium (Leach MS.) GRAY, Proc. Zool. Soc., London, 1847, p. 154, No. 234.
Sole example, *Murex reticulatus* Montagu.

BITTIUM PRISCUM Dall.

Plate 8, fig. 3.

Bittium (*Styliferina*?) *priscum* DALL, Trans. Wagner Inst., vol. 3, pl. 1, p. 189, 1890; pt. 2, p. 275, pl. 11, fig. 6, 1892.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Shepard, Dall, and Post. U. S. Nat. Mus. No. 165103.

BITTIUM (PRISCUM var.?) SORA, new variety.

A shell which may be a variety of *B. priscum* and is only represented by a single specimen has been received too late for figuring. It has 11 whorls and an acute apex; the whorls in front of the suture are excavated and plain; at the periphery there is one strong spiral thread separated by an interval from two closely adjacent threads in front of it, and in the later whorls a still stronger thread just behind the suture and on the last whorl marginating the base; the base is flattish, with four or five fine spiral threads, and the canal obsolete. The axial sculpture is of numerous obscure riblets which slightly undulate the spirals. Height 8.75; of last whorl 3.5; maximum diameter 3.0 mm.

Tampa silex beds, collected by E. J. Post, U. S. Nat. Mus., No. 314740.

BITTIUM ADELA, new species.

Plate 13, fig. 16.

Shell small, thin, with 8 rather rapidly increasing whorls; spire conic, apex acute; suture distinct, not channeled; axial sculpture of (on the penultimate whorl eleven) short nodular ribs, conspicuous on the periphery, obsolete toward the sutures; behind the periphery the whorl slopes flatly toward the preceding suture, the anterior slope is much shorter and terminates at a carina in front of which the next suture is laid; on this slope there is spiral sculpture of four or more fine close-set revolving threads; the posterior slope is similarly sculptured, and on the periphery there are indications of a slightly stronger but similar single thread; the sculpture is essentially the same over the whole spire; base of the shell limited by the post sutural carina before mentioned; flattish, sculptured with about nine revolving little elevated threads, with slightly wider interspaces; canal short, distinct; outer lip thin, defective, not internally lirate; aperture subquadrate. Length 8.5, maximum diameter 4.5 mm.

Tampa silex beds, Ballast Point, Tampa Bay, Florida. One specimen, possibly immature, from the Post collection, U. S. Nat. Mus. No. 165104.

Genus CERITHIUM Bruguière.

Cerithium (part) BRUGUIÈRE, *Encycl. Méth.*, pt. 2, 1792, p. 467.—LAMARCK, *Prodrome*, 1799, p. 73. Type, *Murex aluco* Linnaeus.

Pseudovertagus VIGNAL, *Bull. Mus. Nat. Hist. Paris*, p. 358, 1904.

CERITHIUM GEORGIANUM Lyell and Sowerby.

Cerithium georgianum LYELL and SOWERBY, *Quart. Journ. Geol. Soc. London*, vol. 1, p. 439, fig. —, 1845.—DALL., *Trans. Wagner Inst.*, vol. 3, pt. 2, p. 278, 1892.

Tampa silex beds Ballast Point, Tampa Bay, Florida; also in the rock dredged from the ship channel off the point, and from the Oli-

gocene limestone of Jacksonboro, Screven County, Georgia; Vaughan. U. S. Nat. Mus. No. 165105.

This species does not belong to the typical group of the genus, but in the present confused state of the nomenclature of *Cerites* I use the generic name in its widest sense.

CERITHIUM PRAECURSOR Heilprin.

Plate 5, fig. 5; plate 12, fig. 26.

Cerithium praecursor HEILPRIN, Trans. Wagner Inst., vol. 1, p. 114, pl. 16, fig. 58, 1887.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 285, 1892.

Shell small, thin, slender, with about 9 sculptured whorls, the nucleus defective; suture distinct; axial sculpture of (on the penultimate whorl 11) small rounded riblets, with wider interspaces, not continuous over the spire and slightly retractive, they practically become obsolete at the periphery; besides these the axial sculpture comprises only rather marked incremental lines and the usual varices at the beginning of the second half of the last whorl, and at the aperture; spiral sculpture of (on the spire 3 and on the last whorl 6) primary spiral threads with wider, nearly equal interspaces, the threads equal and slightly swollen where they cross the axial riblets; between these, in the interspaces, are two or three much finer equal threads (hardly apparent in the figure) equally spaced, and on the back of the canal 5 or 6 close-set coarser threads; aperture sub-lunate with a narrow sulcus between a subsutural nodule, and the outer lip behind; inner lip continuous, with a smooth free edge; outer lip smooth internally with a slight varical thickening behind; canal wide, very short, slightly recurved, with no sulcus at the base of the whorl behind it. Length 12 mm., maximum diameter 4.5 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Various collectors. U. S. Nat. Mus. Nos. 112523 and 165106.

This seems to have been an ancestor of such forms as *C. maccarium* Say. It has also been found in the shape of molds in the limestone of Wakulla County, northwest Florida, near Wakulla.

CERITHIUM, sp. indet.

Cerithium sp. Indet, DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 285, 1892.

Tampa silex beds at Ballast Point, Tampa Bay, and also in the Wakulla limestone, Florida. U. S. Nat. Mus. No. 113371.

The specimens were too imperfect for description but not identical with the preceding.

CERITHIUM PLECTRUM, new species.

Plate 9, fig. 3.

Shell small, solid, comprising about 5 whorls without the (decolate) nucleus which seems to have been smooth; spiral sculpture =

on the two succeeding whorls 1, on the next whorl 3, on the fourth whorl 4, and on the last whorl 8 spiral ridges, crossing about 16 axial ribs and slightly nodulous at the intersections, the interstitial reticulations looking like squarish pits; the whorls are slightly turreted by the sculpture and the suture very distinct; the aperture ovate, the outer lip thickened and outwardly denticulated by the ends of the spirals; a thick layer of callus on the body; the anterior sulcus distinct, the whorls under the sculpture well rounded; length of shell 5.2, of last whorl 3, maximum diameter 2.3 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. One specimen. U. S. Nat. Mus. No. 166105.

This species is nearest to *C. milium* Dall, of the Pleistocene and recent fauna at Colon, Panama.

Genus POTAMIDES Brongniart.

Potamides BRONGNIART, Ann. du Muséum, Paris, vol. 15, 1810, p. 368. Sole example, *P. lamarckii* Brongniart. Oligocene.

POTAMIDES HILLSBOROËNSIS Heilprin.

Plate 8, fig. 5.

Cerithium hillsboroënsis HEILPRIN, Trans. Wagner Inst., vol. 1, p. 124, pl. 8, fig. 67, 1887.

Potamides hillsboroënsis DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 286, pl. 15, fig. 12, 1892.

Tampa silex beds, Dall; also in the overlying Orbitolite bed or Tampa limestone at Ballast Point and on the Hillsboro river near Tampa Bay, and on the Chattahoochee River near the railway bridge at Chattahoochee, northwest Florida, and in the Wakulla county limestone; Burns and Willcox. U. S. Nat. Mus. No. 164700.

POTAMIDES (LAMPANELLA) TRANSECTA Dall.

Plate 14, fig. 3.

Potamides (Lampanella) transecta DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 189, pl. 11, fig. 7, 1890; pt. 2, p. 287, 1892.

Tampa silex beds at Ballast Point, Tampa Bay, Florida, where it is not uncommon, Willcox, Burns, and Dall. U. S. Nat. Mus. No. 112525.

Subgenus PYRAZISINUS Heilprin.

Pyrazisinus HEILPRIN, Trans. Wagner Inst., vol. 1, p. 115, 1887.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 287, 1892.

Sole example and type *P. campanulatus* Heilprin.

POTAMIDES (PYRAZISINUS) CAMPANULATUS Heilprin.

Plate 13, figs. 15, 18.

Potamides (Pyrazisinus) campanulatus HEILPRIN, Trans. Wagner Inst., vol. 1, p. 115, pl. 16, fig. 59, 1887.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 288, pl. 11, figs. 10, 10a; pl. 15, figs. 2, 6, 10, 1892.

Tampa siliceous beds at Ballast Point, Tampa Bay, very common, Wilcox, Shepard, Dall, and Burns; also in residual clay at Baileys Mill Creek sink, three-quarters of a mile northeast of Lloyds, Jefferson County, Florida; L. C. Johnson. U. S. Nat. Mus. No. 165108.

The species varies in size a good deal, at the adult stage, and also in the strength of the spiral sculpture, which is usually most pronounced in front of the suture. The varix is often very prominent but the transverse ribs are never as strong and square as in *P. scalatus* or *P. cornutus*.

POTAMIDES (PYRAZISINUS) CORNUTUS Heilprin.

Plate 8, fig. 1.

Cerithium cornutum HEILPRIN, Trans. Wagner Inst., vol. 1, p. 124, pl. 8, fig. 68, 1887.

Potamides (Pyrazisinus) cornutus DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 288, pl. 15, fig. 3, 1892.

Tampa siliceous beds at Ballast Point, Florida, very rare; also, as molds, in the overlying Orbitolite limestone near Tampa City, and in the limestone of the Pithlachascotee River, Wilcox and Heilprin, and in Wakulla County, Florida, Burns.

This species was originally described from a pathologic specimen which had been injured and formed an irregular double mouth, the projecting lip of which suggested the specific name. This will be evident on an inspection of the figure. A somewhat analogous species *P. scalatus* Heilprin (as *Cerithidea*) occurs in the Florida Pliocene, and another in the Oligocene of Santo Domingo. The type is in the collection of the Philadelphia Academy of Natural Sciences.

POTAMIDES (PYRAZISINUS) ACUTUS Dall.

Potamides (Pyrazisinus) acutus DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 289, pl. 22, fig. 19, 1892.

Tampa limestone overlying the siliceous beds at Ballast Point, Tampa Bay, and along the Hillsboro River emptying into the Bay, Dall. Found in the form of molds from which a gutta percha cast was made.

I have included this reference because the relation of the limestone and the siliceous beds is so close that it may eventually prove to be found in both, like many other species. The species is shorter and more acute than either of the others, with a remarkably produced lip.

Family CERITHIOPSIDAE.

Genus CERITHIOPSIS Forbes and Hanley.

Cerithiopsis FORBES and HANLEY, Brit. Moll., vol. 3, p. 364, 1853. Type, *Murex tubercularis* Montagu.

CERITHIOPSIS SILICATA, new species.

Plate 12, fig. 19.

Shell small with an acute apex, later becoming subcylindrical; nucleus lost, the next 2 or 3 whorls with 2 elevated spiral threads and no axial sculpture, followed by whorls with 3, gradually increasing to four straplike spirals over riding numerous axial stouter rounded ribs with equal interspaces extending nearly from suture to suture, and forming nearly square deep equal pits by their intersections; suture close, but the elevated spirals on each side of it give it a deeply channelled aspect; there are three spirals on the rather convex base diminishing in size forward, but only incremental axial sculpture; aperture defective, but without lirae; remaining whorls in all, 10. Height, 6.5; maximum diameter, 2 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Dall. U. S. Nat. Mus. No. 165,111.

Family TRICHOTROPIDAE.

Genus TRICHOTROPIS Broderip and Sowerby.

Trichotropis BRODERIP and SOWERBY, Zool. Journ., vol. 4, 1826, p. 373. Type, *Turbo bicarinatus* Sowerby.

Subgenus CERITHIODERMA Conrad.

Cerithioderma CONRAD, Journ. Acad. Nat. Sci. Phila., ser. 2, vol. 4, p. 295, March, 1890.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 293, 1892.

TRICHOTROPIS (CERITHIODERMA) PRIMA Conrad.

Cerithioderma prima CONRAD, Journ. Acad. Nat. Sci. Phila., ser. 2, vol. 4, p. 295, pl. 47, fig. 30, 1890.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 293, 1892.*Mesostoma rugosa* HEILPRIN, Proc. Acad. Nat. Sci. Phila., 1879, p. 215, pl. 13, fig. 13.—MEYER, Ber. Senckenb. Ges., 1887, p. 18.

Middle and upper Eocene of Claiborne, Mississippi, and Lisbon, Alabama. Oligocene of the Tampa silex beds? U. S. Nat. Mus. No. 113394.

The specimen from Ballast Point is in such poor condition that the identification of the species is doubtful.

Family MODULIDAE.

Genus MODULUS Gray.

- Modulus* GRAY, Synopsis Brit. Mus., 1842, pp. 60, 90, (name only); Proc. Zool. Soc. London, for 1847, p. 150.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 293, 1892. Monotype, *Trochus modulus* Linnaeus.
- Turbinopsis* CONRAD, Journ. Acad. Nat. Sci. Phila., ser. 2, vol. 4, p. 289, March, 1860. Type, *T. hilgardi* Conrad, Cretaceous of Mississippi.
- Pseudotrochus* HEILPRIN, Trans. Wagner Inst., vol. 1, p. 114, 1887; not of Klein.

This genus has existed in America since the era of the Cretaceous, and it is somewhat remarkable that it has so few recent species as descendants.

MODULUS TURBINATUS Heilprin.

Plate 15, fig. 7.

- Pseudotrochus turbinatus* HEILPRIN, Trans. Wagner Inst., vol. 1, p. 114, pl. 16, fig. 57, 1887.
- Modulus turbinatus* DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 294, pl. 18, fig. 12, 1892.

Tampa silex beds at Ballast Point, Florida; Heilprin and Dall. U. S. Nat. Mus. No. 165110.

This is, perhaps, the finest and largest species of the genus.

Family LITTORINIDAE.

Genus LACUNA Turton.

- Lacuna* TURTON, Zool. Journ., vol. 3, p. 190, Oct. 1827. Type, *Helix lacuna* Montagu.
- Lutea* BROWN, Ill. Brit. Conch., Dec. 1827, expl. pl. 46, figs. 50-53; *Helix lutea* and *H. lacuna* Montagu.
- Ephelia* LEACH, Moll. Gt. Brit. 1852, p. 192, pl. 9, fig. 3; *Turbo vincta* Montagu?
- Temina* LEACH, Moll. Gt. Brit. 1852, p. 182; fig'd sp. *Lacuna puteolus* Forbes and Hanley.
- Medoria* LEACH, Moll. Gt. Brit. 1852, p. 196, *Turbo crassior* Walker, first species.

For *Lacuna* Turton named no type, but *Helix lacuna* Montagu would by the rules be taken as the homonym, and was so taken by Herrmannsen in 1847, though Gray, in the same year, suggested Turton's first species, *L. pallidula*.

LACUNA PRECURSOR, new species.

Plate 12, fig. 5.

Shell small, smooth, turbinato-conic, with about 4 well rounded whorls separated by a deep suture; apical whorl very small and flattened above, the others almost inflated, regularly increasing, with

no visible sculpture; base rounded to the angular margin of a narrow flatly excavated groove behind the inner lip; aperture ovate, retractorily oblique, entire, the margin crossing the body with a band of callus; outer lip thin, entire; inner lip a little thickened behind, passing evenly into the outer lip in front. Height 5.75, maximum diameter 3.5 mm.

Tampa silex beds, Ballast Point, Tampa Bay, Florida.

One specimen in the Post collection, U. S. Nat. Mus. No. 165124.

Family CAECIDAE.

Genus CAECUM Fleming.

Caecum FLEMING, Edinb. Encycl., vol. 7, p. 67, 1817. Fig'd species, *C. glabrum*, Edinb. Encycl., vol. 7, pl. 204, fig. 7.

Caeculum FLEMING, Philos. Zool., 1822, *Adæ* Macgillivray, Moll. Aberdeen, pp. 25, 39, 1843.

Brochus BROWN, Ill. Conch. Gt. Brit., ed. 1, 1827, expl. pl. 10.

CAECUM SOLITARIUM O. Meyer.

Caecum solitarium O. MEYER, Alabama Geol. Rep., p. 68, pl. 3, fig. 9, 1886.—

DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 297, 1892.

Oligocene of Vicksburg, Mississippi (Meyer), and of Ballast Point, Tampa Bay, Florida, in the silex beds. U. S. Nat. Mus. No. 113396.

Family VERMETIDAE.

Genus SERPULORBIS Sasso.

Serpulorbis SASSO, Giorn. Ligustica, 1827, p. 482.—BROWN, Ital. Tertiärgeb., p. 65, 1831.

SERPULORBIS GRANIFERA Say.

Serpula granifera SAY, Journ. Acad. Nat. Sci. Phila., ser. 1, vol. 4, p. 154, pl. 8, fig. 4, 1824.

Serpulorbis granifera DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 303, 1892.

Oligocene of Tampa silex beds at Ballast Point, Tampa Bay, Florida, and at White Beach, near Osprey, Florida, Dall; also at Martins Station, Hernando County, Florida, Willcox. Miocene of Maryland, Finch; and of City Point, Virginia, Haldeman. U. S. Nat. Mus. No. 165113.

SERPULORBIS BALLISTAE Dall.

Plate 14, fig. 4.

Serpulorbis (granifera var.?) ballistae DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 304, pl. 22, fig. 21, 1892.

Tampa silex beds at Ballast Point, Tampa Bay, Florida, Willcox and Dall. U. S. Nat. Mus. No. 165114.

SERPULORBIS DECUSSATA Gmelin.

Serpula decussata GMELIN, Syst. Nat., vol. 13, p. 3745, 1792.

Vermetus decussatus (Morch) TRYON, Manual, vol. 8, p. 181, pl. 53, figs. 71, 72, 1886.

Serpulorbis decussata DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 304, 1892.

Oligocene of the Tampa silex beds, at Ballast Point, Dall, and of Santo Domingo, Gabb. Pliocene of the Caloosahatchie and Shell Creek, Florida, Dall and Willcox. Pleistocene of Simmons Bluff, South Carolina, Burns. Living from North Carolina to the Antilles in 22 fathoms or less, United States Fish Commission.

Genus PETALOCOCHUS Lea.

Petalocochus LEA, Trans. Amer. Philos. Soc., ser. 2, vol. 9, p. 233, 1845.

Type, *P. sculpturatus* Lea, Trans. Amer. Philos. Soc., ser. 2, vol. 9, pl. 34, fig. 3.

PETALOCOCHUS VARIANS Orbigny.

Vermetus varians ORBIGNY, Voy. Am. Mer. Moll., p. 456, pl. 54, figs. 7-10, 1843.

Vermetus (Petalocochus) varians DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 305, 1892.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Pliocene of the Waccamaw beds of North Carolina and of the Caloosahatchie and Shell Creek, Florida, Willcox. Pleistocene of the Florida Keys, and living from southwest Florida, south to Rio Janeiro; Orbigny. U. S. Nat. Mus. No. 165716.

Another species of *Petalocochus* appears to exist in the silex beds, but the specimens so far obtained are insufficient for its identification.

Genus VERMICULARIA Lamarck.

Vermicularia LAMARCK, Prodrome, p. 78, 1799. Monotype, *Serpula lumbricalis* LINNÆUS.

Vermetus DAUDIN, Recueil de Mémoires, 1800, p. 34, same type.

VERMICULARIA (ANGUINELLA) VIRGINICA Conrad.

Serpula virginica CONRAD, Foss. Medial Tert., page 3 of cover to part of the editions of parts 1 and 2, April 16, 1839.

Vermetus virginica (CONRAD) ORBIGNY, Prodr. Pal., vol. 3, p. 48.

Anguinella virginica CONRAD, Medial Tert., p. 77, pl. 44, fig. 41, 1845; Proc. Acad. Nat. Sci. Phila., for 1863, p. 568.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 306, 1892.

Vermetus anguina TUOMEY and HOLMES Pleoc. Foss. S. Car., p. 123, pl. 263, fig. 12, 1857; not of Lea.

Oligocene of Shiloh, New Jersey, and of White Beach, near Osprey, Florida, Dall. Miocene of Virginia, Conrad, and of the Pedee River, South Carolina, Tuomey and Holmes.

Genus SILIQUARIA Lamarck.

Siliquaria LAMARCK, Prodrôme, 1799, p. 73. Type, *Serpula anguina* Linnaeus.

SILIQUARIA VITIS Conrad.

Siliquaria vitis CONRAD, Foss. Tert. Form., ed. 1, pt. 3, p. 36, Aug., 1833; ed. 3, p. 47, pl. 17, fig. 3, 1845.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 307, 1892.

Tenagoda vitis CONRAD, Amer. Journ. Conch., vol. 1, p. 33, 1865.

Eocene of the Claiborne sands. Oligocene of the Tampa silex beds, Ballast Point, Florida, Dall. U. S. Nat. Mus. No. 165112.

Family TURRITELLIDAE.

Genus TURRITELLA Lamarck.

Turritella LAMARCK, Prodrôme, p. 74, 1799. Sole example, *T. terebra* Linnaeus.

Terebra (ANONYMOUS) Mus. Calonnianum, 1797, not of Bruguière
Aculea PERRY, Conch., 1811.

Turritellus MONTFORT, 1810

Epitonium No. 2, BOLTEN, Mus. Boltenianum, p. 92, 1798.

TURRITELLA TAMPÆ Heilprin.

Plate 14, fig. 1.

Turritella tampæ HEILPRIN, Trans. Wagner Inst., vol. 1, p. 113, pl. 8, fig. 53, 1887.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 309, pl. 17, fig. 8, 1892.

Tampa silex beds at Ballast Point, Tampa Bay, Florida, Willcox Shepard, and Dall. U. S. Nat. Mus. No. 165119.

The almost microscopic spiral threads with which the entire surface is covered are not attempted to be shown on the figure given.

TURRITELLA TAMPÆ var. TRIPARTITA Dall.

Plate 5, fig. 1.

Turritella tampæ var. *tripartita* DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 309, 1892.

Tampa silex beds at Ballast Point, Tampa Bay, Florida, Dall. U. S. Nat. Mus. No. 112588.

This variety has the equatorial constriction marginate on both sides by a primary cord, with one marginating the suture behind; the other primaries obsolete, the fine spiral striation remaining. The surface of the whorl is thus divided into three equal striated bands, separated by two prominent threads.

Two specimens of this variety were found among the numerous *Turritellæ* collected from the Ballast Point beds.

TURRITELLA (TAMPAE var.?) MEDIOCONSTRICA, new species.

Plate 13, fig. 3.

Shell slender, acute, with age showing a tendency to loose coiling of the whorls, which are then constricted in the middle; number of the whorls in the figured specimen 16, the nucleus lost, the subsequent whorls rounding to the suture, with two low spiral keels, each about one-fourth of the axial width of the whorl, from the most adjacent suture; between these the whorl is excavated and shows at first one (the number gradually increasing to five on the last whorl) small rounded closely adjacent spiral threads, separated only by a narrower groove; aperture with a wide rounded excavation of the outer lip, the deepest part of which is slightly above the middle of the whorl; the basal portion of the lip is also moderately excavated, and between the two the portion at the anterior keel of the whorl projects most prominently, though distally rounded off. Length of shell 59, axial length of last whorl 11, maximum diameter 15 mm.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida, E. J. Post. U. S. Nat. Mus. No. 165122.

TURRITELLA TAMPAE var. PAGODAEFORMIS Heilprin.

Plate 14, fig. 8.

Turritella pagodaformis HEILPRIN, Trans. Wagner Inst., vol. 1, p. 112, pl. 8, fig. 52, 1887.

Turritella tampa var. *pagodaformis* DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 310, pl. 17, fig. 9, 1892.

Tampa siliceous beds, Heilprin, Willcox, Dall, and Burns. U. S. Nat. Mus. No. 112595.

The specific distinctness of this form from *T. tampa* is rendered doubtful by better specimens than were available to Professor Heilprin.

TURRITELLA MEGALOBASIS Dall.

Plate 14, fig. 6.

Turritella megalobasis DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 310, pl. 17, fig. 11, 1892.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida; Dall. U. S. Nat. Mus. No. 165120.

This seems to be a rare species, and no more material has come to hand.

TURRITELLA CHIPOLANA Dall.

Turritella chipolana DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 312, pl. 22, fig. 24, 1892.

Oligocene of the Tampa siliceous beds at Ballast Point, Tampa Bay, and of the Chipola marls, on the Chipola River, northwest Florida. U. S. Nat. Mus. No. 165121.

TURRITELLA SYSTOLIATA, new species.

Plate 9, fig. 6.

Shell large, solid, with rather rapidly increasing whorls, medially constricted whorls, and with the basal carina conspicuously overhanging the succeeding whorl; spiral sculpture on the upper part of the spire of two small beaded threads in the middle of the whorl, with two more conspicuous flattish transversely nodulous cords on each side of them, a wide, nearly smooth space on each outer side, and on the basal carina a still more prominent rippled cord; on the later part of the shell a more or less numerous series of small interstitial threads is found, and the anterior major cord behind the carina becomes more conspicuous than the others; over the whole surface small, wavy spiral grooves appear under a magnifier; the axial sculpture consists only of incremental lines, which indicate a deep, wide sulcus in the outer lip about the middle of the whorl; base apparently flattened; specimen decollate, diameter at the decollation 7 mm., length of nine whorls 74, maximum diameter of last whorl 24, of the constricted part of the same 19 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 166103.

This remarkably fine species appears to be rare. In its rapidly increasing whorls it recalls *T. megalobasis* Dall, but is quite differently sculptured.

TURRITELLA LITHARIA, new species.

Plate 13, fig. 2.

Shell small, slender, the type-specimen with 9 whorls, the apex being decollate; sculpture of the early whorls composed of lines of growth crossed by two spiral ridges equidistant from the suture and each other; the anterior margin of the whorls at the suture is angulate, gradually becomes prominent and finally functions as a third spiral ridge; all these ridges are closely, minutely beaded with the interspaces nearly smooth; on the last whorl there is a small beaded thread close behind the posterior spiral; base flattish or even somewhat excavated and nearly smooth; aperture defective, the sulcus of the outer lip rounded, deepest near the posterior spiral ridge. Length 19, maximum diameter 45 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida, one specimen. U. S. Nat. Mus. No. 165118.

This is doubtless a young shell, but it differs from the young of any of the species yet known from this horizon.

TURRITELLA ATACTA, new species.

Plate 13, fig. 5; plate 14, fig. 5.

Turritella gatunensis DALL, TRANS. WAGNER INST., vol. 3, pt. 2, p. 31
17, fig. 10, 1892, not of Conrad.

This species resembles rather closely Conrad's description of *uvasana* (but not his figure, which is a mere caricature) and Costa Rica species recently named *tristis* by Brown and Pilbry which was figured by Gabb in 1878, under the name of *gatunensis*. A careful review of the available material leads to the belief that it is distinct from either. Any one who will compare either of Gabb's figures with the original diagnosis of *T. uvasana* will certainly find them irreconcilable. The figure on plate 13 represents what may be a variety.

The shell is slender (13 whorls to 26 mm.) with a rather indistinct suture. The top of the whorls flattish or slightly excavated with 4 or 5 medium spiral threads with a much finer thread in the intervals; the rest of the whorl with 3 prominent major threads, distant and with 2 or 3 smaller threads in the intervals; the whorls slightly convex with 1 major and numerous minor spiral threads. Aperture subquadrate, the outer lip somewhat flexuous; length of type-specimen (13 whorls) 26 mm., breadth 6 mm.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida.
Nat. Mus. No. 165123.

The shell figured as *T. uvasana* by Gabb in the Paleontological Survey of California has rather prominently rounded whorls with 5 or 6 subequal, equally distributed spiral threads, and there is a Californian species with these characters, but the diagnosis of *T. uvasana* calls for quite different characters. *T. gatunensis* Conrad has been shown by Pilbry to be quite distinct. The *tristis* of Pilbry and Brown should be carefully compared with *uvasana* Gabb not Conrad.

T. atacta belongs in the group with *T. acropora* Dall of the same zone.

Family VIVIPARIDAE.

Genus LIOPLAX Troschel.

Lioplax TROSCHEL, Gebiss d. Schnecken, vol. 1, p. 100, 1857. Type-species, *L. subcarinata* Say.

LIOPLAX FLORIDANA Dall.

Plate 16, fig. 8.

Lioplax floridana DALL, TRANS. WAGNER INST., vol. 3, pt. 1, pl. 1, 1890.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida.
Nat. Mus. No. 111937.

This species is represented only by one poor specimen, of which, however, the genus is sufficiently recognizable. It was thought best to put its occurrence on record and not await better material, which it is to be hoped may eventually not be lacking.

Family ASSIMINIIDAE.

Genus ASSIMINEA Leach.

Assiminea (Leach Ms.) FLEMING, Hist. British Anim., p. 275, 1828. Type,

A. grayana Jeffreys.

? *Asscmania* KNIGHT, Journ. Conch. (Leeds), vol. 9, p. 296, 1900.

ASSIMINEA ALDRA, new species.

Plate 5, fig. 9.

Shell minute, of about 5 moderately rounded whorls with a distinct suture; spire tapering evenly to a somewhat blunt apex; surface smooth; last whorl more than half the length of the shell; aperture rounded ovate, peristome moderately thickened not reflected, a well marked layer of callus on the body; umbilical region imperforate. Height 2, maximum diameter 1 mm.

Tampa siliceous beds, at Ballast Point, Tampa Bay, Florida. One specimen, E. J. Post, U. S. Nat. Mus. No. 166106.

This is perhaps the oldest member of the genus which is reported from the Pliocene or Pleistocene only, as far as I can ascertain.

Family RISSOIDAE.

Genus RISSOINA Orbigny.

Rissoina ORBIGNY, Voy. Amer. Mer., 1840, p. 395. Type, *R. inca* Orbigny.

RISSOINA SUPRALAEVIGATA, new species.

Plate 13, fig. 1.

Shell small, smooth, subacute, with about 7 flattish whorls separated by a feebly defined suture; nuclear whorl defective, the remainder gradually increasing; last whorl rounded on the base, with a thick pillar lip; outer lip protractively arcuate, markedly receding toward the suture, slightly thickened; body with no perceptible callus in the specimen. Length 5.5 mm., maximum diameter 2 mm.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection, U. S. Nat. Mus. No. 165125.

Genus *AMNICOLA* Gould and Haldeman.

Amnicola GOULD AND HALDEMAN, Inv. Mass., 1841, p. 228. Type, *A. porata* Say, *sp. Puludina*.

Leachia RISSO, Hist. Nat. Eur. Mer., 1826, p. 102. First species, *L. viridescens* RISSO, Hist. Nat. Eur. Mer., 1826, fig. 35. Not *Leachia* LACEPÈDE, 1821.

Microna ZIEGLER, *fide* Stimpson, *Hydrobiol.*, p. 4, 1865.

AMNICOLA ADESTA, new species.

Plate 1, fig. 7.

Shell minute, smooth with 5 whorls; nucleus minute not differentiated from the succeeding whorls, rather blunt; whorls plumply rounded with a deep suture between them; at the end of the penultimate whorl is a constriction marking the place of a former resting stage; aperture subulate, peritreme complete, simple, slightly thickened, pillar lip slightly separated from the body whorls with a chink behind it, extending across the body to the posterior sutural commissure of the aperture; base rounded. Height 3.2, maximum diameter 1.7 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida.

One specimen from the Post collection, U. S. Nat. Mus. No. 165023.

AMNICOLA, sp. indet.

A defective specimen of an *Amnicola*, different from *A. adesta*, but too imperfect to describe, was collected by Mr. Post. It is short and stout and notable for its inflated whorls and very deep constriction at the suture. U. S. Nat. Mus. No. 214742.

Genus *CRUCIBULUM* Schumacher.

Crucibulum SCHUMACHER, Essai, p. 182, 1817. Type, *Calyptrea chinensis* Lamarck.

Section *DISPOTAEA* Say.

Dispotaea SAY, Journ. Acad. Nat. Sci. Phila., vol. 4, p. 131, 1824. Type, *Calyptrea costata* Say.

CRUCIBULUM CONSTRICTUM Conrad.

Dispotaea constricta CONRAD, Bull. Nat. Inst., vol. 2, p. 194, pl. 1, fig. 2, 1842; Fos. Med. Tert., p. 80, pl. 45, fig. 4, 1845.

Crucibulum costata TUDNEY AND HOLMES, Pleioc. fos. S. Car., p. 107, pl. 25, fig. 4, 1857; not of Say.

Crucibulum constrictum DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 350, 1892.

Oligocene of Jericho, New Jersey, and of the Tampa silex beds at Ballast Point, Tampa Bay, Florida, Burns and Dall; Miocene of the Choptank River, and St. Mary's County, Maryland; of the James

River, Virginia; of North and South Carolina, and of the upper bed at Alum Bluff, Chattahoochee River, Florida. U. S. Nat. Mus. No. 112597.

This species does not appear to have survived into the Pliocene.

Genus CALYPTRAEA Lamarck.

Calyptrea LAMARCK, Prodrôme, p. 78, 1799 (not of Lamarck, Syst. des Anlm. s. Vert., 1801, p. 70). Type, *C. chinensis* Linnaeus.

Trochita SCHUMACHER, Essai, p. 184, 1817.

Infundibulum SOWERBY, Min. Conch., vol. 1, pl. 97, 1812; not of Montfort, 1810.

Galerus (ANONYMOUS) Mus. Calonnianum, p. 1797 (not available under the rules).

Leptonotis Conrad, 1866, which was regarded as a very young *Calyptrea* by the writer in the Tertiary of Florida, 1892, is now, according to Prof. G. D. Harris, to be referred to the very young stage of *Capulus complexus* Aldrich.

CALYPTRAEA TROCHIFORMIS Lamarck.

Calyptrea trochiformis LAMARCK, Ann. du Museum, Paris, vol. 5, pt. 1, p. 385, pl. 15, fig. 3, 1804.—DESHAYES, Coq. fos. bas. de Paris, vol. 2, p. 30, pl. 4, figs. 1-4, 11-13, 1824.

Infundibulum echinulatum SOWERBY, (*I. spinulosum*, *I. tuberculatum* Sowerby), Min. Conch., vol. 1, pl. 97, figs. 1, 2, 7, 1812.

Infundibulum trochiformis LEA, Contr. Geol., p. 96, pl. 3, fig. 76, 1833.

Infundibulum urticosum CONRAD, Fos. Tert. form., ed. 1, No. 3, p. 32, 1833.

Trochita alta CONRAD, in Walles' Geol. Miss., p. 289, pl. 15, figs. 3a, 3b, 1854; Proc. Acad. Nat. Sci. Phila., for 1855, p. 259.

Infundibulum perarmatum CONRAD, Proc. Acad. Nat. Sci. Phila., pl. 1, p. 31, 1841; Fos. Med. Tert., p. 80, pl. 45, fig. 6.

Trochita tetrica CONRAD, Checkl. Eoc. Fos. Smiths. Inst., p. 28, No. 817, 1863; Journ. Acad. Nat. Sci. Phila., ser. 2, vol. 1, p. 113, lines 8 and 9, and ref. to plates p. 133, pl. 11, fig. 3, Aug. 1848.

Calyptrea trochiformis DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 352, 1892.

Velutina (*Otina*) *expansa* Whitfield, 1865, and *Leptonotis* (new genus) *expansa* Conrad, 1866, which were tentatively placed as synonyms of *Calyptrea trochiformis* by the writer in the Wagner Transactions above cited, are referred to the young of *Capulus complexus* Aldrich by Prof. G. D. Harris. They were founded on a young shell one millimeter in diameter.

The species is fossil in the Eocene of the Paris Basin, of Britain, and of America; in the Oligocene of Vicksburg, Miss., and of the Tampa silex beds at Ballast Point, Tampa Bay, Florida, and of the lower bed at Shiloh, New Jersey; in the Miocene of the Choptank River in Maryland, and of Wilmington, North Carolina. U. S. Nat. Mus. No. 112598.

Like most sessile gastropods, the sculpture of the surface varies from smooth to spinose or shagreened, and the shell from nearly flat to elevated according to situs. Similar variations may be observed in the recent *Crucibulum spinosum*, and are without specific value.

Family HIPPONICIDAE.

Genus HIPPONIX DeFrance.

- Amalthea* SCHUMACHER, Essai, 1817, p. 181; not *Amaltheus* Montfort, 1810.
Hipponix DEFANCE, Bull. Soc. Philom. Paris, Jan. 1819, ser. 3, pp. 3-9.
 Type, *H. cornucopiae* DeFrance.
Pileopsis (part) LAMARCK, An. s. Vert., vol. 6, 1822, pt. 2, p. 19.
Hipponyx BLAINVILLE, Dict. Sci. Nat., vol. 32, 1824, p. 297.
Melluvium MELVILL, Proc. Mal. Soc. London, vol. 7, 1906, p. 82. Type
Capulus lissus E. A. Smith.
Hipponix DALL, Bull. Mus. Comp. Zool., vol. 43, No. 6, 1908, p. 330.

HIPPONIX PYGMAEUS Lea.

Plate 13, figs. 12-14.

Shell small, solid, convex, with a deeply incurved posterior apex forming a little more than one whorl; nucleus smooth, the remainder of the shell radially sculptured with numerous flattened threads, which project slightly at the margin and the various resting stages and are separated by slightly wider interspaces, most of which contain a single, much finer intercalary thread; the radial sculpture is crossed by numerous subimbricating incremental lines or resting stages, which in the earlier portion of the shell are rather regularly spaced and produce a reticulated effect; base rounded ovate with a thick margin, more or less crenulated by the radial sculpture. Length of shell 9.2, of aperture 7, height 5, maximum breadth 7 mm.

Eocene of Claiborne, Alabama, Lea; Oligocene of Tampa silex beds, Ballast Point, Tampa Bay, Florida.

Figured specimen from the Post collection, U. S. Nat. Mus. No. 165127.

HIPPONIX WILLCOXII Dall.

Plate 16, fig. 7.

- Amalthea willcoxi* DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 359, pl. 17, fig. 6, 1892.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Dall U. S. Nat. Mus. No. 165126.

An imperfect cast of a species resembling this was found in the Oligocene white limestone at Jacksonboro, Georgia, of which specimens were sent me by the late Professor Whitfield under the erroneous impression that they were of Claibornian Eocene age.

Family XENOPHORIDAE.

Genus XENOPHORA Fischer de Waldheim.

Xenophora FISCHER DE WALDHEIM, Tab. Syn. Zoogn., p. 113, 1808.

XENOPHORA CONCHYLIOPHORA Born.

Plate 15, figs. 1, 3.

Trochus conchyliophorus BORN, Mus. Caes. Vind., index, p. 333, 1778.*Xenophora laevigata* FISCHER DE WALDHEIM, Tab. Syn. Zoogn., p. 113, 1808.*Trochus leprosus* MORTON, Syn. Org. Rem., p. 46, pl. 15, fig. 6, 1834.*Phorus reclusus* CONRAD, Proc. Acad. Nat. Sci., vol. 7, p. 262, 1855; Walles' Geol. Miss., p. 289, pl. 17, figs. 6a, 6b, 1854.*Onustus reclusus* CONRAD, Amer. Journ. Conch., vol. 1, p. 33, 1865.*Xenophora agglutinans* DE GREGORIO, Mon. Eoc. Ala., p. 144, 1890, not of Lamarck.*Xenophora reclusa* DE GREGORIO, Mon. Eoc. Ala., p. 144.*Xenophora humilis* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 182, figs. 10, 10a, 1890, not of Conrad.*Xenophora conchyliophora* DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 360, 1892.

In the "Ripley" Cretaceous of Alabama, at Prairie Bluff, Morton and Conrad; the Eocene of Woods Bluff, Alabama, and of Jackson, Mississippi, Aldrich, Wailes, and Conrad; Oligocene of the Tampa silex beds, of the superincumbent limestone at Bartow, and of the Chipola River marl in Florida; the Miocene of Cape Fear River, North Carolina, at Mrs. Purdy's marl bed, C. W. Johnson; Pliocene of the Caloosahatchie River and Shell Creek, Florida; and living in moderate depths of water off the eastern coast of the United States from Cape Hatteras to the Gulf of Mexico, and through the Antilles.

The groups *Xenophora* s. s. and *Tugurium* which are sufficiently distinct in the existing fauna, as we recede in Tertiary time become merged so far as to be indistinguishable.

Family NATICIDAE.

Genus NATICA Scopoli.

Natica (Adanson) SCOPOLI, Intr. Hist. Nat., p. 392, 1777.—BRUGUIÈRE, Encycl. Meth., vol. 1, p. XVI, 1789.—LAMARCK, Prodrôme, p. 77, 1799.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 366, 1892.

Cochlis BOLTEN, Mus. Bolten, p. 146, 1798.

Nacca RISSO, Hist. Nat. Eur. Merid., vol. 4, 1826, p. 148. *Nerita fulminea* (Linnaeus) Gmelin.

Subgenus CRYPTONATICA Dall.

Cryptonatica DALL, Trans. Wagner Inst., vol. 3, pt. 2, pp. 362, 366, 1892.Type, *N. clausa* Broderip and Sowerby.

This group has the shelly operculum smooth and without grooves, and the umbilicus completely filled with a smooth callus.

NATICA (CRYPTONATICA) FLORIDANA Dall.

Plate 16, fig. 3.

Natica (Cryptonatica) floridana DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 366, pl. 17, fig. 5, 1892.

Oligocene of the Tampa silex beds, at Ballast Point, Tampa Bay; and of the Chipola marl, on the Chipola River, Calhoun County, Florida; Dall and Burns. U. S. Nat. Mus. No. 165129.

There are differences of rotundity at the shoulder in different specimens, similar to differences due to sex in recent species.

Genus POLINICES Montfort.

Polinices MONTFORT, Conch., vol. 2, p. 223, 1810. Type, *Nerita mamilla* Linnaeus.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 367, 1892.

Subgenus EUSPIRA Agassiz.

Euspira AGASSIZ, German ed. Sowerby's Min. Conch., pp. 14, 320, 1842. First species, *N. glaucinoides* Sowerby.

Lunatia GRAY, Proc. Zool. Soc. London, 1847, p. 149. Type, *Natica amputalaria* Lamarck.

Naticina FISCHER, Man. Conchyl., p. 766, 1885; not of Guldin, Trans. Linn. Soc., vol. 5, p. 31, 1834.

Natica RISSO, Hist. Nat. Eur. Merid., vol. 4, 1826, p. 147. Type, *N. pulchella* Risso; not *Natica* Scopoli s. s.

Lunatia DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 369, 1892.

Euspira DALL, Bull. Mus. Comp. Zool., vol. 43, p. 334, 1908; U. S. Geol. Survey, Prof. paper 59, p. 87, 1909.

Notwithstanding a misstatement in the diagnosis (which is contradicted by the figures) *Euspira* will take the place of the more familiar *Lunatia* of Gray, having five years' priority, as I showed in 1908. The type is *E. glaucinoides* Sowerby=*N. labellata* Lamarck, 1804.

POLINICES (EUSPIRA) HEMICRYPTUS Gabb.

Plate 9, fig. 9.

Natica hemicrypta GABB, Journ. Acad. Nat. Sci. Phila., ser. 2, vol. 4, p. 375, pl. 67, fig. 5, 1860.—CONRAD, Amer. Journ. Conch., vol. 4, p. 66, pl. 6, fig. 1 (not fig. 7), 1868.—WHITFIELD, Gastr. N. J. Miocene marls, p. 118, pl. 22, figs. 1-5, 1895.

Lunatia eminauloides GABB, Journ. Acad. Nat. Sci. Phila., ser. 2, vol. 8, p. 339, pl. 44, fig. 4, 1875.

† *Natica caroliniana* TUOMEY and HOLMES, Pleioc. fos. S. Car., p. 116, pl. 25, fig. 18, 1857.

Polynices (Lunatia) hemicryptus DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 371, 1892.

Oligocene of Shiloh and Jericho, New Jersey, Gabb and Burns; of the Tampa silex bed, at Ballast Point; of the Chipola marls, near

the county bridge, Calhoun County, Florida; and of Sapote, Costa Rica (Gabb). U. S. Nat. Mus. No. 165130.

Genus AMPULLINA (Lamarck) Bowdich.

Ampullina (Lamarck) BOWDICH, Elem. Conch., vol. 1, p. 31, 1822. Type, pl. 9, fig. 2 (*Ampullaria depressa* Lamarck, not Sowerby; not *Ampullina* Blainville, 1825).—DALL, U. S. Geol. Survey, Prof. paper No. 59, p. 89, 1900.

The name of this genus appears in its French form (*Ampulline*) in the works of DeFrance and other writers, as proposed by Lamarck, some years before it appeared in Latin as above indicated. The type as figured by Bowdich is one of the heavier species with a distinct umbilicus, probably *A. depressa* Lamarck, and not the form in which the umbilicus is closed over by a mass of callus, as imagined by several respectable authors.

The group contains both umbilicated and imperforate species and has been considerably divided. *Lupia* Conrad is an elevated form of the imperforate type and differs from *Amauropsis* Mörch only in having no channel at the suture. The *Natica phasianelloides* of Orbigny is a typical *Lupia*. The full synonymy is given in Professional paper No. 59, above cited. While not using the Latinized form of the name DeFrance, in the Dictionnaire des Sciences Naturelles,¹ states that Lamarck had arranged, first in *Ampullaria* and afterwards in a genus which he called "Ampulline," the marine fossils belonging to this group, DeFrance gives a list of 14 species. Bowdich, in his work published somewhat later, cites in connection with *Ampullina* part of the remarks of DeFrance.

AMPULLINA STREPTOSTOMA Heilprin.

Plate 12, fig. 27.

Natica streptostoma HEILPRIN, Trans. Wagner Inst., vol. 1, p. 112, pl. 16, fig. 51, 1887.

Ampullina streptostoma DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 374, 1892.

Oligocene of Tampa silex beds at Ballast Point and La Penotiere's hammock, Florida, and the white limestone of Jacksonboro, Georgia; Heilprin, Dall, and Whitfield. U. S. Nat. Mus. No. 165131.

This species is related to *A. sigaretina* Lamarck, of the Paris basin Eocene, but has a wider basal callus and more open umbilicus. From *A. fischeri* Dall, of the Chipola beds, it differs by not having the umbilicus closed. The young, however, of these species are practically identical.

¹ Vol. 20, 1821, p. 446.

AMPULLINA AMPHORA Heilprin.

Plate 11, fig. 5.

Natica amphora HEILPRIN, Trans. Wagner Inst., vol. 1, pp. 112, 120, pl. 16, fig. 50, 1887.

Ampullina (*Ampullinopsis*) *amphora* DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 375, 1892.

Oligocene of the Tampa silex beds at Ballast Point (Stearns, Heilprin) and of the overlying limestone, and of the Chipola marl of Calhoun County, Florida. U. S. Nat. Mus. No. 165133.

This bears to the *A. mississippiensis* Conrad, much such a relation as the *A. maxima* of France does to the typical *A. crassatina* of the Parisian Eocene. The basal fasciole is narrower and defined by a more distinct line than in *A. mississippiensis*, which otherwise it much resembles.

AMPULLINA SOLIDULA Dall.

Plate 3, fig. 10.

Ampullina solidula DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 376, pl. 22, fig. 31, 1892.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Dall, U. S. Nat. Mus. No. 112933.

Only a single specimen has been obtained, which is a very solid shell, much more so than *A. streptostoma* of the same size, and with a different umbilicus.

Genus AMAUOPSIS Mörch.

Amauopsis MÖRCH, Moll. Gronl. Nat. Bidr. Beck's Gronl., 1857, p. 81, subgenus of *Mamma*. Sole example, *Nerita islandica* Gmelin; see Conchyl. Cabinet, vol. 1, p. 215, fig. 1181.

This group has a thin elevated shell, with a channeled suture and a horny operculum, a conspicuous periostracum (dehiscent in the typical species) and in the recent fauna is confined to the boreal seas. *Amaura* Möller, often associated with it, belongs to the Pyramidellidae.

AMAUOPSIS FLORIDANA Dall.

Plate 5, fig. 11.

Amaura guppyi (Gabb) HEILPRIN, Trans. Wagner Inst., vol. 1, p. 112, 1887.
Polinices (*Amauopsis*) (*guppyi* Gabb var. ?) *floridana* DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 378, 1892.

Tampa silex beds at Ballast Point Tampa Bay, Florida, Dall and Willcox. U. S. Nat. Mus. No. 112955.

The differences noted in the Wagner memoir seem sufficient to distinguish the Floridian from Gabb's Antillean species.

Genus SINUM Boltcn.

Sinum BOLTEN, Mus. Boltcnianum, 1798, p. 14. Type, *Helix haliotoidea* (Linnaeus) Gmelin, Syst. Nat., vol. 6, p. 3663, 1792, *ex parte*.—DALL,

U. S. Geol. Surv. Prof. paper No. 59, p. 91, 1909.

Sigaretus LAMARCK, Prodrôme, 1799, p. 77. Same type.

Cryptostoma BLAINVILLE, 1817.

Catinus H. and A. ADAMS, 1853; not of Oken, 1815.

SINUM CHIPOLANUM Dall.

Plate 12, fig. 29; plate 16, fig. 1.

Sigaretus chipolanus DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 379, pl. 17, fig. 7, 1892.

Oligocene of the Tampa silex beds at Ballast Point, also of the Chipola marl, Calhoun County, Florida; Dall. U. S. Nat. Mus. No. 165135.

This species is most nearly related to the *S. declive* Conrad, of the Claibornian Eocene, from which it is separable by its closed umbilicus and the absence of the emargination of the pillar, which is a characteristic of *S. declive*. The Chipola specimens are larger and finer than any yet obtained at Ballast Point.

SINUM IMPERFORATUM, new species.

Plate 5, fig. 8.

Shell small, elevated, solid, of about 5 whorls, of which the nuclear $2\frac{1}{2}$ appear smooth; subsequent whorls sharply densely grooved, the grooves having a tendency to pair, and the interspaces flattened; both grooves and interspaces are minutely zigzagged by the intersection with them of the incremental lines; spire moderately elevated, suture distinct; aperture oblique, the outer lip joining the body above the periphery of the preceding whorls; inner or pillar lip thickened, with a slight depression behind it, but no umbilical chink. Height of shell 13.2, of aperture 11.7, maximum diameter 11 mm.

Tampa silex beds from the vicinity of the Hillsboro river, Florida, collected by E. J. Post. U. S. Nat. Mus. No. 166107.

This species has some resemblance to *S. fragile* Conrad, but is much more solid and the characters of the sculpture and of the umbilical region differ.

Family TURBINIDAE.

Genus TURBO (Linnaeus) Lamarck.

Turbo LINNAEUS, Syst. Nat., ed. 10, p. 761, 1758.—LAMARCK, Prodrôme, p. 74, 1799. Type, *T. marmoratus* Linnaeus.

The original group was very heterogeneous, but by common consent the name has been restricted to shells of the type of *T. marmoratus* Linnaeus, which was Lamarck's monotype in 1799.

Section *SENECTUS* Swainson.

Senectus SWAINSON, Mal., pp. 214, 348, 1840. Type, *Turbo chrysostomus* Linnaeus.

This group was indicated by Da Costa in the anonymous Museum Calonnianum, which has been excluded from nomenclature by the International Committee's decision.

TURBO (*SENECTUS*) *CRENORUGATUS* Heilprin.

Turbo crenorugatus HEILPRIN, Trans. Wagner Inst., vol. 1, p. 113, pl. 16, fig. 54, 1887.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 382, 1892.

Tampa silex beds at Ballast Point, Tampa bay, Florida; Heilprin, Willcox, Burns, and Dall. U. S. Nat. Mus. No. 112984.

This species is not uncommon among the silicified fossils at Ballast Point, but rarely found in good condition, and, so far, always immature. That it must grow to a much larger size than any yet reported is certain, since Mr. Willcox found an operculum which measured in greatest diameter 31 mm., more than twice the size of any which fit the aperture of the largest shell yet found at the same locality.

Genus *ASTRAEA* Bolten.

Astraea BOLTEN, Mus. Boltenianum, 1798, p. 79. Type, *Trochus imperialia* Gmelin. Not *Astraea* Lamarck, 1801.

Astraea DALL, U. S. Geol. Surv., Prof. paper No. 59, p. 92, 1909.

Astrallium LINE, 1807.

Imperator MONTFORT, 1810.

Subgenus *LITHOPOMA* Gray.

Lithopoma GRAY, Fig. Moll. An., vol. 4, p. 88, 1850. Type, *Trochus tuber* Linnaeus.

ASTRAEA (*LITHOPOMA*), sp. indet.

Astrallium sp. indet. DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 385, 1892.

An indeterminate species of *Astraea* is represented by fragments and imperfect casts from the Tampa silex beds and the limestone of Wakulla County, near Wakulla, Florida; Dall and Vaughan. Also in the Chipola marl of Calhoun County, Florida; Burns.

Family *TROCHIDAE*.Genus *TEGULA* Lesson.

Tegula LESSON, Ill. de Zool. Niv., 17, 1834, pl. 51 (no pagination on the text). Type *T. elegans* Lesson, = *T. pellis-serpentina* Mawe.

Tegula, being the older name, takes precedence over *Chlorostoma* and *Omphalius* as subgenera, if the latter be accepted as valid groups.

TEGULA (OMPHALIUS) EXOLETA Conrad.

Plate 16, figs. 15, 16.

Monodonta exoluta (sic) CONRAD, Proc. Acad. Nat. Sci. Phila., vol. 1, p. 309, 1843 (*err. typ. pro exoleta*).

Monilia exoluta CONRAD, Proc. Acad. Nat. Sci. Phila. for 1862, p. 569, 1863.

Turbo heliciformis HEILPRIN, Trans. Wagner. Inst., vol. 1, p. 113, pl. 16, fig. 55. 1887.

Chlorostoma (*Omphalius*) *exoletum* DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 388, pl. 17, figs. 4, 4a, 1892.

Oligocene of the Tampa silex beds, Ballast Point, and of the lower bed at Alum Bluff, Chattahoochee River, northwest Florida, and Miocene of the Carolinas; Burns. U. S. Nat. Mus. No. 112572.

The *Monodonta kiawahensis* of Tuomey and Holmes should be compared with this species, which does not appear in the Pliocene of the Caloosahatchie, nor in the living fauna of Florida. A variety *limatum*¹ is reported from Alum Bluff and the Chipola marl.

Genus CALLIOSTOMA Swainson.

Calliostoma SWAINSON, Mal. pp. 218, 219, 351, 1840. Type, *Trochus zizyphinus* var. *conuloides* Lamarck.

Zizyphinus GRAY, Syn. Brit. Mus., 1840. (nude name.)

CALLIOSTOMA METRIUM Dall.

Plate 15, fig. 8.

Calliostoma metrium DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 394, pl. 22, fig. 27. 1892.

Oligocene of the Tampa silex beds at Ballast Point, and of the Chipola marl, near the county bridge over the Chipola River, Calhoun County, Florida; Dall. U. S. Nat. Mus. No. 113025.

CALLIOSTOMA TAMPICUM, new species.

Plate 4, fig. 1.

Shell small, with 7 flattened whorls, an inconspicuous suture, and flattish base; the nucleus is smooth and projects perceptibly upward; the subsequent whorls show 5 subequal and equally spaced spiral ridges more or less distinctly beaded; on the last whorl and a half these ridges become reduced to small threadlike proportions, hardly rising above the surface of the whorl, not beaded, and separated by wide interspaces with occasional still smaller intercalary threadlets; the periphery of the whorl is bluntly rounded and produced backward; the base is flattened and spirally sculptured with 10 or 12 obscure spirals which might be regarded as flattened threads separated by narrow striae, the whole more or less obsolescent; (the aper-

¹ Dall, Trans. Wagner Inst., vol. 3, pt. 2, p. 388, 1892.

ture is obscured by matrix and the end of the pillar broken (Height of shell 10.5, maximum diameter of base 10, minimum diameter of base 9 mm.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 166108.

This shell has, in miniature, some resemblance to *C. grammocum* Dall, of the Chipola beds, but the latter is a much larger species.

Genus MARGARITES Leach.

Margarita LEACH, Thompson's Ann. Philos., vol. 14, p. 202, 1819; no description. Leach, Zool. Misc., vol. 1, p. 107, 1815.

Margarites (Leach Ms.) GRAY, Ann. Mag. Nat. Hist., vol. 20, 1841, p. 268.—LEACH, Moll. Gt. Britain, 1852, pp. 147, 197. Type, *Hells Margarita* Montagu, DALL, U. S. Geol. Survey, Prof. paper, No. 59, p. 1909.

MARGARITES TAMPAËNSIS Dall.

Plate 3, fig. 11.

Margarita tampaënsis DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 406, fig. 5, 1892.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Dall and Burns. U. S. Nat. Mus. No. 112573.

The fine striation may or may not be present, especially on later whorls.

Family DELPHINULIDAE.

Genus LIOTIA Gray.

Liotia GRAY, Synopsis Brit. Mus., 1840 and 1842, name only; Proc. Soc. London for 1847, p. 145. Type, *Delphinula cancellata* Gray and A. ADAMS, Gen. Rec. Moll., vol. 1, 1854, p. 404.—DALL, Blake (1889, p. 385).

LIOTIA (ARENE) SOLARIELLA Heilprin.

Plate 16, figs. 4, 5.

Delphinula ? solariella HEILPRIN, Trans. Wagner Inst., vol. 1, p. 113, fig. 56, 1887.

Liotia (Arene) solariella DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 17, figs. 1, 1a, 1892.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; Heilprin, Dall and Burns, U. S. Nat. Mus. 165137.

LIOTIA (ARENE) CORONATA Dall.

Plate 16, figs. 6, 17.

Liotia (Arene) coronata DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 17, figs. 2, 2a, 1892.

Tampa silex beds, Ballast Point, Tampa Bay, Florida; Dall. U. S. Nat. Mus. No. 112575.

This species seems to be less abundant than the *L. solariella*, only the original specimens have yet come under my observation.

Family HELICINIDAE.

Genus HELICINA Lamarck.

Helicina LAMARCK, Prodrôme, 1799, p. 76 (no species mentioned); Syst. des Anim. s. Vert. 1801, p. 94. Type, *Helicina ncritella* Lamarck after Lister, pl. 62, fig. 59 (Barbados); not of Roissy, Hist. Gen. des Moll., vol. 5, 1806, p. 275, pl. 54, fig. 1 (= *Umbonium* Link).—PFEIFFER, Pneumop. Viv., 1852, pp. 338, 362.

This genus was founded by Lamarck on a figure of a snail from Barbados given by Lister as above cited, and an unquestionable member of the genus as generally understood. However, Roissy, in adopting the genus a few years later, made the mistake of figuring a species of *Umbonium* (*Rotella* Lamarck) as an example of Lamarck's genus. This error misled Gray and some others, who probably did not take the trouble to look up the original figure in Lister, into regarding the type of *Helicina* as a marine shell.

HELICINA BALLISTA Dall.

Plate 15, figs. 9, 11.

Helicina ballista DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 3, pl. 1, figs. 2, 2a, 1890.

Tampa silex beds at Ballast Point and in the overlying Tampa limestone with *Orbitolites*; and in rock of the same age at Six-Mile Run, near Orient Station, east of Tampa City; all collectors. U. S. Nat. Mus. No. 111939.

HELICINA BALLISTA var. TAMPAE Dall.

Helicina ballista var. *tampae* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 4, 1890.

With the last, and nearly as abundant. U. S. Nat. Mus. No. 111943.

This is similar to the typical form and has the same number of whorls, but is generally smooth and slightly flatter on the spire beside being constantly smaller. If we had it in its original condition, probably there might be specific differences of color which are lost in the fossil state, but as it stands the safer plan seems to be to regard it as a variety of the larger shell with which it is associated.

HELICINA POSTI, new species.

Plate 5, fig. 7.

Shell in form much resembling *H. ballista* var. *tampae*, but larger, proportionately more depressed, with a less thickened peristome, per-

fectly smooth surface except for incremental lines, about 5 whorls, the last near the aperture descending a little, and a smooth flat pad of callus over the umbilical region. The specimen collected has the peristome moderately thickened internally, but has no reflection of the edge or beveled margin as in the smaller species. There is a faint notch at the base of the pillar which has no parallel in the other species. Maximum diameter of shell, 11.5; minimum diameter of shell, 9.75; height, 9 mm.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida. One specimen collected by E. J. Post. U. S. Nat. Mus. No. 166093.

Family NERITIDAE.

Genus NERITA (Linnaeus) Lamarck.

Nerita (part) LINNAEUS, Syst. Nat., ed. 10, 1758, p. 776.

Nerita LAMARCK, Prodrôme, 1799, p. 77. Type, *Nerita cauriae* Lamarck.

The name *Nerita* derives from the ancients and is mentioned (in its Greek form *Neritos*) by Aristotle. Among eighteenth-century naturalists it was used indiscriminately for *Natica*, *Nerita*, *Neritina*, and other gastropods of similar form, and it was not until the time of Lamarck that this very natural group was definitely segregated.

NERITA TAMPAENSIS DALL.

Plate 16, fig. 2.

Nerita tampaensis DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 421, pl. 17, fig. 3, 1892.

Tampa silex beds at Ballast Point, Tampa Bay, Florida, and in the overlying limestone at the same place and also at La Penotiere's Hammock, a mile and a half south of Orient Station and 6 miles eastward from Tampa City, on Six-Mile Run; Dall and Burns. U. S. Nat. Mus. No. 165138.

This is the first species of *Nerita* which has been described from the Atlantic Tertiary.

Family FISSURELLIDAE.

Genus FISSURIDEA Swainson.

Fissuridea SWAINSON, Malac., p. 356, 1840.—PILSBRY, in Nautilus, vol. 5, p. 104, 1892.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 425, 1892.

Glyphis CARPENTER, 1856; not of Agassiz, 1840, *Pieces*.

FISSURIDEA CHIPOLANA Dall.

Fissuridea chipolana DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 426, pl. 22, fig. 21, 1892.

Oligocene of the Tampa silex beds at Ballast Point; Post. Also in the Chipola marls near the county bridge, Calhoun County,

Florida, Dall; and in the equivalent lower bed at Alum Bluff on the Chattahoochee River. Also in the Miocene of Duplin County, North Carolina; Burns. U. S. Nat. Mus. No. 165140.

This appears to be the precursor of the recent *Fissuridea alternata* Say, but does not attain so large a size, judging by the specimens so far collected.

Genus FISSURELLA Bruguière.

Subgenus CREMIDES H. and A. Adams.

FISSURELLA (CREMIDES) CERYX, new species.

Plate 1, figs. 10, 11.

Shell small, thin, subconic, basal outline rounded quadrate, the anterior portion slightly wider; apex within the posterior third of the length; apical opening narrow, centrally slightly widened; sculpture of flattish radial riblets (about three to a millimeter) with subequal interspaces, in most of which there are traces of a single much finer radial thread; concentric sculpture of rather marked incremental lines, which are not close set and which feebly inbricate the riblets in passing over them; base (in the type) slightly arcuate, the ends more produced than the central portions; interior smooth except for a faint, muscular impression, the aperture not showing any callus on the interior margin; basal margin feebly crenulated by the ends of the riblets. Length 9.5 mm., height 4 mm., maximum diameter 7.1 mm.; the posterior margin of the aperture in front of the posterior end of the shell 2 mm.

Tampa silex beds, Ballast Point, Tampa Bay, Florida; one specimen collected by E. J. Post. U. S. Nat. Mus. No. 165109.

Order POLYPLACOPHORA.

Family CHITONIDAE.

Genus ISCHNOCHITON (Gray).

Ischnochiton GRAY, Proc. Zool. Soc. London, 1847, p. 126.—SHUTTLEWORTH, Berner Mitth., 1853, p. 66.—PILSBRY, Man. Conch., vol. 14, p. 86, 1882.—DALL, Trans. Wagner Inst., vol. 3, pt. 2, p. 434, 1892. Type, *Chiton textilis* Gray, South Africa.

ISCHNOCHITON TAMPAËNSIS Dall.

Plate 3, figs. 8a, 8b.

Ischnochiton tampaënsis DALL, Trans. Wagner Inst., vol. 3, pt. 2, pl. 23, fig. 23, 1892.

Tampa silex beds, at Ballast Point, Tampa Bay, Florida; Dall and Crosby. U. S. Nat. Mus. No. 112607.

In the absence of the tail valve and the armature of the girdle this species can not be referred to its particular section of the genus.

It has been assumed, since there are no obvious discrepancies, that the two valves figured belong to the same species, though collected by different persons and at different times.

Order PRIONODESMACEA.

Superfamily NUCULACEA.

Family NUCULIDAE.

Genus NUCULA Lamarck.

Nucula LAMARCK, Prodrôme Nouv. Class. Coq., p. 87, 1799. Type, *Arca nucleus* Linnaeus.

Nuculana LINK, Besch. Rostock Samml., p. 155, 1807 (modification of Lamarck's name to suit the taste of Link).

Glycymeris DA COSTA, Brit. Conch., p. 170, 1778, part.

The name *Nuculana*, by some writers erroneously utilized for the group first discriminated by Schumacher under the name of *Leda*, was proposed by Link as a more desirable form of the name *Nucula*, proposed by Lamarck for shells of the type of *Arca nucleus* Linnaeus.

Link changed many names to suit his own fancy, and in the present case *Nuculana* is simply an exact synonym of *Nucula*.

NUCULA TAMPAE, new species.

Plate 21, figs. 13, 14.

Shell small, rounded trigonal, solid, very inequilateral; beaks low, adjacent; anterior end produced, rounded, with the dorsal margin flattened, but no circumscribed lunule; posterior end short, subtruncate, with a flattened ill-defined area, but no distinct escutcheon; ligament rather large for the size of the shell and situated internally directly behind the beaks; surface concentrically finely rugose, the sculpture crossed by fine radial striae, with wider interspaces (too fine to be shown in the figures); margins finely crenulate internally. Length 7.3 mm., height 6 mm., maximum diameter 4.75 mm.

Tampa silex beds, Ballast Point, Tampa Bay, Florida. Collected by Dall, Burns, and Post. Type-specimen U. S. Nat. Mus. No. 165169, from the Post collection.

The sculpture in some of the pseudomorphs is so faint that the valves appear nearly smooth, but this is probably only an incident of fossilization.

Family LEDIDAE.

Genus LEDA Schumacher.

Leda SCHUMACHER, Essai, pp. 55, 172, 1817.—DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 579, 1898. Type, *Leda rostrata* Gmelin (not Montagu) = *Mys pernula* Muller, Zool. Danica, 1779.

LEDA FLEXUOSA Heilprin.

Plate 23, figs. 8, 10.

Leda flexuosa HEILPRIN, Trans. Wagner Inst., vol. 1, p. 119, pl. 16, fig. 66 (two views) 1887.—DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 589, pl. 33, figs. 5, 5a, 1898.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Heilprin and Dall. U. S. Nat. Mus. No. 165170.

Since the original figures were very obscure, better ones are now provided.

LEDA POSTI, new species.

Plate 21, figs. 6, 9.

Shell small, thin, equivalve, inequilateral, slender, rounded in front, attenuated and bluntly pointed behind; basal profile gently arcuate, anterior dorsal slope slightly convex, posterior slope nearly direct; beaks low, much incurved, opisthocelous; no distinct lunule, but a narrow impressed space in front; behind the beaks a long narrow escutcheon extending to the end of the valve with the cardinal margins pouting; sculpture of incremental lines more prominent near the beaks and base, nearly obsolete on the middle of the valve; near the base these become sparse and sublamellose in the type-specimen; interior smooth; the muscular scars small, not thickened; hinge with about 20 anterior and 19 posterior V-shaped small teeth separated by a well-marked subtriangular resiliifer, wholly internal and just below the beaks. Length of valve 14 mm., of posterior end 8 mm., height 6.7 mm., maximum diameter 5 mm.

Tampa silex beds Ballast Point, Tampa Bay, Florida. Type-specimen from the Post collection. U. S. Nat. Mus. No. 165171.

Genus YOLDIA Möller.

Yoldia MÖLLER, Index Moll. Groenl., 1842, p. 18. First species, *Yoldia arctica* Gray, as *Nucula*.

Yoldia DALL, Trans. Wagner Inst., vol. 3, pt. 4, pp. 593-4, 1898. Type, *Y. glaciatis* Wood.

YOLDIA FRATER Dall.

Plate 4, fig. 5.

Yoldia frater DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 596, pl. 32, fig. 1, 1898.

Oligocene of the Chipola marls in Calhoun and Walton Counties, Florida; and of the Oak Grove sands at Oak Grove, Santa Rosa County, northwest Florida; Dall. U. S. Nat. Mus. No. 165172.

A small *Yoldia* obtained at Ballast Point from the Tampa silex beds appears to be the young of this species.

smooth and rather smaller; length of figured specimen 35, height maximum diameter 20 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; E. J. U. S. Nat. Mus. No. 165175.

Like the other typical Arks this species has a marked byssal gape, being a nestler shows more or less individual variation of form to *situs*.

ARCA PARATINA Dall.

Arca paratina, DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 623, pl. 33, fig. 14, 1898.

Oligocene of the Tampa silex beds at Ballast Point, E. J. Post; the Chipola River marls, near the Calhoun County bridge, and of lower bed at Alum Bluff, on the Chattahoochee River, Florida, Land Burns. U. S. Nat. Mus. No. 165177.

Subgenus BARBATIA (Gray) Adams.

Barbatia GRAY, Syn. Brit. Mus., 1840, nude name; Proc. Zool. Soc. London, for 1847, p. 197.—H. and A. ADAMS, Gen. Rec. Moll., vol. 2, p. 594, 1857. Type, *Arca barbata* Linnaeus.—DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 615, 1898.

Section CALLOARCA Gray.

Calloarca (Gray) H. and A. ADAMS, Gen. Rec. Moll., vol. 2, 1857, p. 535. Sole example, *Arca alternata* Reeve.—DALL, Trans. Wagner Inst., vol. 3, pt. 4, pp. 615, 623, 1898.

BARBATIA (CALLOARCA) MARYLANDICA Conrad.

Plate 4, fig. 3.

Byssarca marylandica CONRAD, Fossils Medial Tert., p. 54, pl. 29, fig. 1, 1840.

Barbatia marylandica CONRAD, Proc. Acad. Nat. Sci. Phila., for 1862, p. 580, 1863.

Barbatia (Calloarca) marylandica DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 623, 1898.

Oligocene of the Tampa silex beds at Ballast Point; of the lower at Alum Bluff, Chattahoochee River; of the Chipola marls, Calhoun County, Florida; and of the marls of Jericho, Cumberland County, New Jersey. Miocene of Plum Point, Calvert Cliffs, and St. Ignace, Maryland; Willcox, Burns, Dall, and Harris. U. S. Nat. Mus. No. 165176.

This species may possibly occur also in the Jacksonian Eocene of Mississippi.

BARBATIA (CALLOARCA) IRREGULARIS Dall.

Plate 17, fig. 4.

Barbatia (Calloarca) irregularis DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 623, pl. 33, fig. 5, 1898.

Oligocene of the Tampa silex beds at Ballast Point (fragment); Pliocene marls of the Caloosahatchie River, Alligator Creek, and Shell Creek, south Florida; Dall and Burns. U. S. Nat. Mus. No. 148949.

The fragment from Ballast Point collected by Mr. Willcox appears to accord specifically with the typical Pliocene form.

BARBATIA (CALLOARCA) ARCULA Heilprin.

Plate 17, fig. 5.

Arca arcula HEILPRIN, Trans. Wagner Inst., vol. 1, p. 118, pl. 16, fig. 65, 1887.

Barbatia (Calloarca) arcula DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 624, pl. 33, fig. 4, 1898.

Tampa silex beds at Ballast Point, Tampa Bay; Willcox and Post. U. S. Nat. Mus. No. 107718.

Section ACAR (Gray) Adams.

Acar (Gray) H. and A. ADAMS, Gen. Rec. Moll., vol. 2, p. 535, 1857; *Ara donaciformis* Reeve.—DALL, Trans. Wagner Inst., vol. 3, pt. 4, 1898, p. 615.

Daphnoderma MÖRCH, 1853, not of Poli, 1795.

BARBATIA (ACAR) RETICULATA Gmelin.

Arca reticulata GMELIN, Syst. Nat., vol. 6, p. 3311, 1792.—CHEMNITZ, Conch. Cab., vol. 2, p. 193, pl. 54, fig. 540.

Arca squamosa LAMARCK, Anim. s. Vert., vol. 6, p. 35, 1819.

Arca domingensis LAMARCK, Anim. s. Vert., p. 40, 1819.

Arca clathrata LAMARCK, Anim. s. Vert., p. 46, 1819.

? *Arca gradata* BRODERIP and SOWERBY, Zool. Journ., vol. 4, p. 365, 1829.

Arca diraricata SOWERBY, Proc. Zool. Soc., 1833, p. 18.—REEVE, Conch. Ico. Arca, pl. 16, fig. 108, 1844.

Barbatia (Acar) reticulata DALL, Trans. Wagner Inst., vol. 3, pt. 4, 629, 1898.

Eocene of the Jacksonian at Moody's branch, Jackson, Mississippi; Oligocene of the Bowden beds, Jamaica, West Indies, the island of Trinidad, at Matura; of the Tampa silex beds at Ballast Point, Tampa Bay, and of the Chipola River marls; Pliocene of the Caloosahatchie River, Florida, and of Limon, Costa Rica; Pleistocene of the Antilles, generally; and living from Cape Hatteras, North Carolina, south to Barbados and the Gulf of Campeche, Mexico. U. S. Nat. Mus. No. 165178.

The fossils are identical with the living shells, and there can be no doubt that the species has existed, with its mutations essentially as at present, in the Antillean region since the upper Eocene.

Section FOSSULARCA Cossmann.

Fossularca COSSMANN, Cat. Illustr., 1887, p. 142. Type, *Arca quadrilatera* Lamarck. Eocene of Paris.

BARBATIA (FOSSULARCA) ADAMSI E. A. Smith.

Arca coelata CONRAD, Fossils Medial Tert., p. 61, pl. 32, fig. 2, 1845; not of Reeve, Conch. Icon. *Arca*, 1844.

Arca lactea C. B. ADAMS, Manuscript; not of Linnaeus.

Arca adamsi (Shuttleworth Ma.) SMITH, Journ. Linn. Soc. London, Zool., vol. 20, p. 499, pl. 30, figs. 6, 6a, 1888.—DALL, Bull. Mus. Comp. Zool., vol. 12, p. 243, 1898.

Barbatia (Fossularca) adamsi DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 629, 1898.

Oligocene of the Tampa silex beds at Ballast Point, of the Chipola marls and Oak Grove sands of Florida; of the Bowden beds, Jamaica, West Indies. Miocene of Duplin County, North Carolina. Pliocene of Waccamaw River, South Carolina; of the Caloosahatchee River, Shell Creek, and Alligator Creek, Florida. Living from North Carolina to Brazil, in 5 to 116 fathoms. U. S. Nat. Mus. No. 165179.

Subgenus SCAPHARCA Gray.

Scapharca GRAY, Proc. Zool. Soc. London, 1847, p. 198. Type, *Arca inaequalis* Brugulière.—H. and A. ADAMS, Gen. Rec. Moll., vol. 2, p. 538, 1857.—DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 618, 1898.

SCAPHARCA HYPOMELA Dall.

Plate 17, fig. 7; plate 21, figs. 17, 18.

Scapharca (Scapharca) hypomela DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 637, pl. 33, fig. 1, 1898.

Oligocene of the Tampa silex beds at Ballast Point, of the lower bed at Alum Bluff, Chattahoochee River, and of the Chipola marls, Calhoun County, Florida. U. S. Nat. Mus. Nos. 165180, 165181.

SCAPHARCA LATIDENTATA Dall.

Plate 25, fig. 2.

Scapharca (Scapharca) latidentata DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 638 pl. 32, fig. 15, 1898.

Oligocene of the Tampa silex beds at Ballast Point; of the lower bed at Alum Bluff, Chattahoochee River; of the Chipola marls, Chipola River, Calhoun County, Florida; and probably of the Oak Grove sands, Santa Rosa County, Florida. U. S. Nat. Mus. No. 149010.

The young of *Anadara aresta* Dall look a good deal like this species, but have the beaks more central and prominent and not mesially impressed.

Genus GLYCYMERIS Da Costa.

Glycymeris DA COSTA, Brit. Conch., p. 170, 1778; Mus. Calonnianum, p. 50, 1797. Type, *Arca glycymeris* Linnaeus.

Tuceta BOLTEN, Mus. Boltenianum, p. 172, 1798, ed. 2, p. 120, 1819. First species, *Arca pilosa* Linnaeus.

Arinca+*Arineoderma* POLI, Test. Utr. Siciliae, vol. 1, p. 32, 1791; vol. 2, p. 254, 1795 (not binomial).

Pectunculus LAMARCK, Prodrôme, p. 87, 1799. Type, *Arca pectunculus* Linnaeus.—LAMY, Journ. de Conchyl., Feb., 1912, p. 84. Not of Huddesford, App. to Lister Conch. Index to Anat. plates, p. 5, pl. 13, fig. 1, 1760.=*Cardium edule* Linnaeus.

Glycymeris DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 607, 1898; Proc. Mal. Soc. London, vol. 10, pt. 3, p. 255, 1912. Not *Glycymeris* Lamarck, 1799 or 1801.

GLYCYMERIS LAMYI, new species.

Plate 20, figs. 11, 13.

Shell small, solid, moderately convex, equivalve, and nearly equilateral; beaks small, low, pointed, median, separated by a narrow diamond-shaped area with about half a dozen ligamentary grooves divaricating from a central imaginary line perpendicular to the beak in each valve; external sculpture of about 20 low, slightly convex, primary radiating riblets, with from one to three smaller intercalary close-set threads in the interspaces; the primary ribs extend over the anterior and middle portions of the shell, but cease near the posterior end, which is sculptured on the posterior area only by threads of the secondary type of which there are about a dozen; these radial ribs are crossed by concentric lines, sometimes rather pronounced, in harmony with the lines of growth and better developed near the margin; profile slightly attenuated toward the beaks and at the lower end of the posterior dorsal area slightly subangular; interior smooth, the margin crenulate as figured; muscular impressions small distinct; disk smooth; hinge with about 10 teeth on each side of the median line, symmetrically arranged. Height 16.5 mm., breadth 17. mm., diameter 8 mm.

Tampa silex beds Ballast Point, Tampa Bay, Florida.

Type-specimen from the Post collection. U. S. Nat. Mus. No 165173.

This form is nearest *G. arcata* Conrad of the Vicksburg horizon in which the radial sculpture is strongest on the beaks and the coarse ribs divide later, while in the present species the radials are smaller on the beaks and stronger distally. The Vicksburg species is also generally higher and somewhat shorter.

Family OSTREIDAE.

Genus OSTREA (Linnaeus) Lamarck.

Ostrea LINNAEUS, Syst. Nat., ed. 10, p. 696, 1758.—LAMARCK, Prodrome, p. 81, 1799. Type, *Ostrea edulis* Linnaeus.

OSTREA SELLAIFORMIS Conrad var. RUGIFERA Dall.

Ostrea sellaeformis CONRAD var. *rugifera* DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 678, 1898.

Oligocene of the Tampa silex beds, Ballast Point; of the Chipola marls and the lower bed at Alum Bluff, Chattahoochee River, Florida. U. S. Nat. Mus. No. 114825.

The typical *O. sellaeformis*, as is well known, is Eocene in distribution; the middle Oligocene form is that I have called *rugifera*, but which is not yet represented by any really well-preserved specimens in the material I have seen; the last term of the series in the upper Oligocene, at Oak Grove, Santa Rosa County, Florida, is that to which I have given the name of variety *pauciplicata*.

OSTREA MAURICIENSIS Gabb?

Ostrea mauriciensis GABB, (part) Journ. Acad. Nat. Sci. Phila., ser. 2, p. 376, pl. 67, 1860.

Oligocene of the mixed marls of southern New Jersey, of the layers above the Altamaha grit of Georgia, and of the Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 153851.

Part of Gabb's *O. mauriciensis* seems to be young *O. georgiana* Conrad; part approaches very closely the *O. virginica* Gmelin; but in nearly all cases the superficial layers of the shell have been destroyed, and the specific identifications must be merely guesswork. Whether there is a really distinct species in the complex remains uncertain.

OSTREA VAUGHANI, new species.

Plate 19, fig. 6.

Shell solid, heavy, with the external sculpture of both valves similar, composed of closely adjacent concentric imbrications or overlapping lamellae corresponding to the incremental lines, with no trace of any radial sculpture; upper valve moderately convex; beak strongly recurved, with a deep wide medial ligamentary sulcus; the inner margins of the valves near the hinge, with a sparse denticulation, especially on the anterior margin. Length 120, width 85, depth of paired valves 60 mm.

Ballast Point, Tampa Bay, either from the silex beds or the limestone immediately above them; E. J. Post. U. S. Nat. Mus. No. 100092.

This fine oyster does not agree with any of the described species of the Oligocene of the coastal plain, and is named in honor of Dr. T. Wayland Vaughan, who has been in charge of the geological exploration of that region for some years.

Family PECTINIDAE.

Genus PECTEN Müller.

Pecten (Klein, 1753) MÜLLER, Zool. Dan. Prodr., p. 248, 1766.—DA COSTA, Brit. Conch., p. 140, 1778.—BOLTEN Mus. Bolt., p. 165, 1798.—LAMARCK, Prodrome d'un Nouveau Class. Coq., p. 88, 1799.—VERRILL, Trans. Conn. Acad. Sci., vol. 10, pp. 41-47, 1897.—DALL, Trans. Wagner Inst., vol. 3, pt. 4, pp. 689-758, 1898. Type *P. maximus* Müller (= *Ostrea maxima* Linnaeus).

Subgenus CHLAMYS Bolten.

Chlamys BOLTEN, Mus. Bolt., p. 161, 1798. Type, *Pecten islandicus* MÜLLER.

Section AEQUIPECTEN Fischer.

Aequiptecten FISCHER, Man. de Conchyl., p. 944, 1886. Type, *Pecten opercularis* Linnaeus.

PECTEN (AEQUIPECTEN) CHIPOLANUS Dall.

Plate 23, fig. 2.

Pecten (*Aequiptecten*) *chipolanus* DALL, Trans. Wagner Inst., vol. 3, p. 733, pl. 29, fig. 9, 1898.

Oligocene of the Tampa silex beds at Ballast Point; of the lower bed at Alum Bluff, Chattahoochee River; and the Chipola marl of the Chipola River, Calhoun County, Florida; Dall and Burns. U. S. Nat. Mus. No. 114784.

Family SPONDYLIDAE.

Genus SPONDYLUS Linnaeus.

Spondylus LINNAEUS, Syst. Nat., ed. 10, p. 610, 1758. Type, *Spondylus gaederopus* Linnaeus.

SPONDYLUS BOSTRYCHITES Guppy.

Plate 19, fig. 4.

Spondylus bifrons SOWERBY, Quart. Journ. Geol. Soc. Lond., vol. 6, p. 53, 1849; not of Goldfuss, Petref., vol. 2, p. 93, pl. 106, figs. 10 a-c, 1835.

Spondylus bostrychites GUPPY, Proc. Sci. Soc. Trinidad, p. 176, 1867.—GABB, Geol. Santo Domingo, p. 257, 1873.—DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 758, 1898.

Oligocene of the Tampa silex beds and of the limestone of White Beach, near Osprey, Florida; of Santo Domingo at Ponton; the Bowden beds of Jamaica and of Anguilla, West Indies. U. S. N. Mus. No. 165182.

SPONDYLUS CHIPOLANUS Dall

Plate 19. fig. 1.

Spondylus (bostrychites var. ?) *chipolanus* DALL, Trans. Wagner Inst., pt. 4, p. 768, 1898.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay, of the lower beds at Alum Bluff, Chattahoochee River; of the Chipola marls of Calhoun County, near the county bridge over the Chipola River; and of the sands at Oak Grove, Santa Rosa County, Florida. U. S. Nat. Mus. No. 114817.

This species at first suspected from poor material to be a variety of *S. bostrychites*, has no radial striation on the minor ribs, but rather a concentric sculpture, also a greater number of spinose ribs, and more oval and inflated form.

Genus PLICATULA Lamarck.

Plicatula LAMARCK, Syst. An. s. Vert., p. 132, 1801. Type, *Plicatula gibbosa* Lamarck An. s. Vert., *P. ramosa* Lamarck 1819.—DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 761, 1898.

Harpa PARKINSON, Org. Rem., vol. 3, pl. 12, 1811.—BROOKS, Intr. Conch., p. 83, 1815. Type, *H. parkinsonii* Bronn.

Ostreonomia CONRAD, Proc. Acad. Nat. Sci. Phila., for 1872, p. 216. Type, *O. carolinensis* Conrad.

PLICATULA DENSATA Conrad.

Plicatula densata CONRAD, Proc. Acad. Nat. Sci. Phila., vol. 1, p. 311, 1843. Medial Tert., p. 75, pl. 43, fig. 6, 1845; Proc. Acad. Nat. Sci. Phila., vol. 14, p. 582, 1863.—DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 763, 1898.

Spondylus inornatus WHITFIELD, Miocene Pal. N. J., p. 34, pl. 5, figs. 1, 2, 1895.

Oligocene of the Peninsular limestone of Archer, Florida, and the Nummulitic horizon at Ocala, Florida, Dall and Willcox; of the Tampa silex beds at Ballast Point; the Chipola marls of Calhoun County; of the lower bed at Alum Bluff on the Chattahoochee River, and of the Oak Grove sands, Santa Rosa County, Florida; also of the Bowden beds of Jamaica, West Indies, and the Guallava beds of Costa Rica. Also in the lower Miocene marls of Cumberland County, New Jersey, at Shiloh and Jericho. U. S. N. Mus. No. 165183.

This species is distinguished from the later *P. marginata* Say, by its usually rounder form and more numerous and less prominent plications. Occasional specimens when attached to a flat surface by a considerable area of the attached valve, do not develop plications, and one such served as the type of Whitfield's *Spondylus inornatus*.

Family ANOMIIDAE.

Genus ANOMIA (Linnaeus) Müller.

Anomia (part) LINNAEUS, Syst. Nat., ed. 10, p. 700, 1758.

Anomia MÜLLER, Prodr. Zool. Dan., pp. xxx, 248, 1776.—REIZIUS, D. Phillips, p. 9, 1788.

Echion+*Echionoderma* POLI, Test. Utr. Sicil., vol. 1, p. 34; vol. 2, p. 1791. (Not binomial.)

Cepa (Hwass Ms) ANONYMOUS, Mus. Calonnianum, p. 45, 1797.

Fenestella BOLTEN, Mus. Boltinianum, p. 193, 1798; ed. 2, p. 134, 1819.

Anomya AGASSIZ, Moul. des Moll., vol. 1, p. 23, 1839.

Diploschiza CONRAD, Amer. Journ. Conch., vol. 2, pp. 77, 105, 1866.

Not *Anomia* DA COSTA, Elem. Conch., p. 292, pl. 6, figs. 3, 10, 1776; nor Bolten, Mus. Boltinianum, p. 134, 1798 (Brachiopoda).

ANOMIA MICROGRAMMATA Dall.

Plate 23, fig. 6.

Anomia microgrammata DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 7, pl. 35, fig. 11, 1898.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay, Dall, Burns, and Willcox; of the lower bed at Alum Bluff, Chatterahoochee River, and of the Chipola River marls, Calhoun County, Florida. Also of the Bowden horizon, Jamaica, West Indies; Henderson and Simpson (var. *indecisa*). U. S. Nat. Mus. No. 1148.

This species is recognized by its fine almost divaricate striation which does not break into pustules near the beak as in the larger and more coarsely sculptured *A. ephippioides* Gabb.

The Bowden form¹ has a still finer and often partially obsolete striation.

Family MYTILIDAE.

Genus MODIOLUS Lamarck.

Modiolus LAMARCK, Prodr. Nonv. Class. Coq., p. 87, 1799. Type, *Mytilus modiolus* LINNAEUS.—Bosc, Hist. Coq., vol. 3, p. 158, 1802.—Lamarck, Besch. Rostock Samml., vol. 3, p. 146, 1807.—Cuvier, Règne Anim., vol. 2, p. 471, 1817.—GOLDFUSS, Zool., p. 611, 1820.—Risso, Hist., vol. 1, p. 323, 1826.—FLEMING, Hist. Brit. Anim., p. 408, 1828.—FORSK., M. Monensis, p. 43, 1838.—HEERMANNSEN, Ind. Gen. Mal., suppl., p. 1852.—DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 700, 1898.

Modiola LAMARCK, Syst. An. s. Vert., p. 113, 1801. Type, *M. papua* Lamarck, Encycl. Méth., pl. 219, fig. 1.—Risso, Moll., vol. 6, p. 1805.—LAMARCK, Anim. s. Vert., vol. 6, p. 119, 1819.—FISCHER, M. de Conchyl., p. 968, 1886.—DALL, Bull. U. S. Nat. Mus., No. 37, p. 1889.

Mytilus SCOPOLI, Intr. ad Hist. Nat., 1777, p. 397, No. 81; not of LINNAEUS. Not *Volvella* Scopoli, Intr. ad Hist. Nat., 1777, No. 84, = *Mytilus* LINNAEUS.

¹ Var. *indecisa* Guppy Ms. in Trans. Wagner Inst., vol. 3, pt. 4, p. 783, 1898.

MODIOLUS SILICATUS DALL.

Plate 24, fig. 11.

Modiolus silicatus DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 798, pl. 27, fig. 28, 1898.

Modiolus tampaensis DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 922, by inadvertence.

Tampa silex beds, Ballast Point, Tampa Bay, Florida; Willcox and Dall. U. S. Nat. Mus. No. 154349.

MODIOLUS BLANDUS, new species.

Plate 20, figs. 3, 6, 12.

Shell of moderate size, thin, rounded in front and behind, dorsally subalate, margins entire with hardly any byssal gape; valves inflated, surface smooth except for incremental lines.

Length 44, height 23, maximum diameter 21 mm.

Ballast Point, Tampa Bay, Florida; E. J. Post, probably from the limestone overlying the silex beds. U. S. Nat. Mus., No. 165226.

The specimen is a well preserved internal cast.

Section BRACHYDONTES Swainson.

Brachydontes SWAINSON, Malac., p. 384, 1840. Type, *Modiola sulcata* Lamarck (1819 not 1807).

Brachydontes FISCHER, Man. de Conchyl., p. 968, 1886.—DALL, Bull. U. S. Nat. Mus. No. 37, p. 138, 1889.

Semimodiola COSSMANN, Cat. Illustr., vol. 2, p. 158, 1887. Type, *Modiola hastata* Deshayes.

Semimodiola COSSMANN, Cat. Illustr., vol. 2, p. 158, 1887. Type, *Modiola sulcata* Lamarck, not Risso.

Brachydontes DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 791, 1898.

MODIOLUS (BRACHYDONTES) GRAMMATUS DALL.

Plate 26, fig. 4.

Modiolus (Brachydontes) grammatus DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 794, pl. 30, fig. 2, 1898.

Tampa silex beds at Ballast Point, Tampa Bay, Florida, Dall, U. S. Nat. Mus. No. 165184. A variety *curtulus* Dall, was obtained by Burns from the lower bed at Alum Bluff, Chattahoochee River, Florida.

The variety is stouter than the type-species, more triangular, with coarser and more nodulous ribs and stronger crenulations of the margin.

Section GREGARIELLA Monterosato.

Gregariella MONTEROSATO, Nom. Con. Medit., p. 11, 1884.—DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 91, 1898. Type, *Mytilus petagnae* Scacchi.
Botulina DALL, Bull. U. S. Nat. Mus. No. 37, p. 38, 1889. Sole example
Modiola opifex Say=*Mytilus coralliophagus* Gmelin, and *Modiola senes*
 Lamarck.

MODIOLUS (GREGARIELLA) MINIMUS Dall.

Plate 24, fig. 6.

Modiolus (Gregariella) minimus DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 797, pl. 35, fig. 26, 1898.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 165185.

Based on an imperfect but characteristic pseudomorph. The complete external features of this species are still to be discovered.

MODIOLUS (GREGARIELLA) cf. OPIFEX Say.

An internal cast strongly recalling the form of *M. opifex* Say was obtained by Mr. Post, but is without the surface characters by which its specific identity might be determined. U. S. Nat. Mus. No. 214741.

Section BOTULA Mörch.

Botula MÖRCH, Yoldi Cat., pt. 2, p. 55, 1853 (no type cited).—H. and A. ADAMS, Gen. Rec. Moll., vol. 2, p. 519, 1857.—FISCHER, Man. de Conchyl., p. 969, 1886. Type, *M. cinnamomeus* Lamarck.

MODIOLUS (BOTULA) CINNAMOMEUS Lamarck.

Modiola cinnamomea LAMARCK, Anim. s. Vert., vol. 6, p. 114, 1819; ed. Deshayes, vol. 7, p. 25, 1835; after Chemnitz, Conchyl. Cab., vol. 8, p. 152, pl. 82, fig. 731, 1785.

Modiolus (Botula) cinnamomeus DALL, Trans. Wagner Inst., vol. 3, p. 797, 1898.

Oligocene of the Tampa silex beds at Ballast Point, of the marl of the Chipola River, Calhoun County, Florida, and of the island of Trinidad, West Indies. U. S. Nat. Mus. No. 165186.

Also in Pliocene marl of the Caloosahatchie beds of Florida, and widely distributed in the warmer waters of the United States and the West Indies in the recent state, usually as a borer in coral or other soft and limy substances. A similar if not identical shell, *M. fusca* Gmelin, has been reported from the Indo-Pacific region.

Genus LITHOPHAGA Bolten.

Lithophaga BOLTEN, Mus. Boltenianum, p. 156, 1798; ed. 2, p. 100, 1818.—MÖRCH, Cat. Yoldi, p. 55, 1853.

Lithodomus CUVIER, Règne Anim., vol. 2, p. 471, 1817.

Lithophagus MEYERLE, Entwurf, p. 69, 1811.

Lithophaga DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 798, 1898.

LITHOPHAGA ANTILLARUM Orbigny.

- Lithodomus antillarum* ORBIGNY, Moll. Cubana, vol. 2, p. 332, pl. 28, figs. 12, 13, 1847 (French edition; Spanish edition, with atlas, 1845).
Modiola corrugata PHILLIPPI, Abbild. und Besch., vol. 2, p. 147, pl. 1, fig. 1, 1846.
Lithodomus corrugatus REEVE, Conch. Iconica, vol. 10, pl. 1, fig. 1, 1858.
Lithophagus dactylus MÖNCH, Cat. Yoldi, vol. 2, p. 55, 1853; not of Sow-
 erby, 1824.
Lithophagus caribæus DALL, Bull. U. S. Nat. Mus., No. 37, p. 38, No. 81,
 1889; not of Philippi.
Lithophaga antillarum DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 799,
 1898.

Tampa silex beds, Ballast Point, Tampa Bay, Florida; Willcox and Dall. Living from Florida southward, throughout the Antilles, usually as a borer in corals. U. S. Nat. Mus. No. 154861.

The casts of the borings due to this and the other species are rather common in the silex beds, often being hollow and the cavity partly filled with water, in which state they are sold as curios to tourists.

LITHOPHAGA NIGRA Orbigny.

- Lithodomus niger* ORBIGNY, Moll. Cubana, vol. 2, p. 331, pl. 28, figs. 10, 11, 1847 (French edition; Spanish edition, 1845).
Modiola caribæa PHILLIPPI, Abbild. und Besch., vol. 3, p. 20, pl. 2, fig. 5, 1847; Zeitschr. f. Malak. for 1847, p. 116.
Modiola antillarum PHILLIPPI (not Orbigny), Abbild. und Besch., vol. 3, p. 20, pl. 2, fig. 4, 1847; Zeitschr. f. Malak. for 1847, p. 116 (young shell).
Mytilus lithophagus GÜNTHER, S. Car. Cat., p. 22, 1848, not of Linnaeus.
Lithophagus niger MÖNCH, Cat. Yoldi, vol. 2, p. 56, 1853.
Lithodomus antillarum REEVE, Conch. Iconica, vol. 10, pl. 2, fig. 7, 1858.
Lithophaga niger DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 799, 1898.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Living from South Carolina southward through the West Indies and to Rio Janeiro, Brazil. U. S. Nat. Mus. No. 154360.

LITHOPHAGA NUDA Dall

Plate 24, fig. 4; plate 26, fig. 7.

- Lithophaga nuda* DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 800, pl. 11, fig. 7, pl. 35, fig. 27, 1898.

Tampa silex beds at Ballast Point, where it and the casts of the burrows are very common, but rarely well preserved. U. S. Nat. Mus. Nos. 165187, 165189.

Few of the specimens retain the thin outer coating of the valves, but those that do are easily recognized by their smooth surface and distinguished from the species of *Diberus* by the cylindrical form and absence of the calcareous mantle outside of the shell. The burrow cast is represented by figure 4.

Section MYOFORCEPS Fischer.

Myoforceps FISCHER, Man. de Conchyl., p. 969, 1886.—DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 799, 1898.

It is one of the puzzles of malacology how the appendages, composed of the dust of their borings, are applied to the outside of the shell by these mollusks and permanently fixed there.

LITHOPHAGA (MYOFORCEPS) ARISTATA Dillwyn.

Mytilus aristatus (Solander MS.) DILLWYN, Cat. Rec. Sh., vol. 1, p. 31, 1817.

Modiola caudigera LAMARCK, Anim. s. Vert., vol. 6, p. 116, 1819; Ency. Meth., pl. 201, fig. 8.—PHILIPPI, Abbild. und Beschr., vol. 2, p. 149, pl. fig. 5, 1846.

Mytilus caudigerus GIBBES, Cat. S. Car., p. 22, 1848.

Lithodomus aristatus FORBES and HANLEY, Brit. Moll., vol. 2, p. 212, 1851.

Lithodomus caudigerus SOWERBY, Genera, Lithodomus, fig. 4, 1824.—REEVE, Conch. Iconica, vol. 10, pl. 3, fig. 16, 1857.

Lithophagus aristatus STIMPSON, Checkl. Rec. Sh., p. 2, 1860.

Lithophagus forficatus RAVENEL, Proc. Acad. Nat. Sci. Phila., for 1861, 44.—TRAYN, Amer. Marine Conch., p. 188, 1873.—DALL, Bull. U. S. Nat. Mus. No. 37, p. 38, 1889.

Lithophaga (Myoforceps) aristata DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 800, 1898.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Living widely distributed over the tropical seas of both hemispheres. U. S. Nat. Mus. No. 165188.

Section DIBERUS Dall.

Diberus DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 799, 1898. Type, *Lithophaga plumula* Hanley.

LITHOPHAGA (DIBERUS) BISULCATA Orbigny.

Lithodomus bisulcatus ORBIGNY, Moll. Cubana, vol. 2, p. 333, pl. 28, figs. 14-16, 1847 (Spanish edition, 1845).

Modiola appendiculata PHILIPPI, Abbild. und Beschr., vol. 2, p. 150, pl. fig. 4, 1846.

Mytilus attenuatus GIBBES, Cat. S. Car., p. 22, 1848, not of Deshayes.

Lithophagus appendiculatus MÖRCH, Cat. Yoldi., vol. 2, p. 56, 1853.

Lithodomus appendiculatus REEVE, Conch. Iconica, vol. 10, pl. 4, fig. 21, 1857.

Lithodomus bixcavatus REEVE, Conch. Iconica, vol. 10, fig. 22 a-b, 1857.

Lithophaga (Diberus) bisulcata DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 801, 1898.

Tampa silex beds, Ballast Point, Tampa Bay, Florida; Da Living from South Carolina south to Rio Janeiro and throughout the West Indies. U. S. Nat. Mus. No. 154362.

This species was found with a siliceous pseudomorph of the calcareous mantle as well as the shell.

Family PLEUROPHORIDAE.

Genus CORALLIOPHAGA Blainville.

Coralliophaga BLAINVILLE, Man. Malac., p. 560, 1825.

Lithophagella (Gray Ms. ?) *vide* H. and A. ADAMS, Gen. Rec. Moll., vol. 2, p. 439, 1857.

Cypriocardia (sp.) LAMARCK, Anim. s. Vert., vol. 6, pt. 1, p. 28, No. 4, 1819.

Coralliophaga DALL, Trans. Wagner Inst., vol. 3, pt. 6, pp. 1497, 1498, Oct., 1903.

CORALLIOPHAGA ELEGANTULA Dall.

Plate 23, figs. 11, 13.

Coralliophaga elegantula DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1499, pl. 25, figs. 2, 2a, 1903.

Coralliophaga elegans DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 920, pl. 25, figs. 2, 2a, 1898; not Deshayes, 1824.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay, and of the Chipola River marls, Calhoun County, Florida; Dall and Crosby. U. S. Nat. Mus. No. 155710.

This can be discriminated from any other American species by its surface—smooth, except for faint incremental lines.

Family CRASSATELLITIDAE.

Genus CRASSATELLITES Krüger.

Crassatellites KRÜGER, Arch. neuest. Entd. Umwelt, vol. 2, p. 466, 1823. Type, *Crassatella gibbosula* Lamarck.—DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1468, 1903.

Crassatella (sp.) LAMARCK, Syst. Anim. s. Vert., p. 119, 1801, not of Lamarck, Prodrôme, p. 85, 1799.

Section SCAMBULA Conrad.

Scambula CONRAD, Amer. Journ. Conch., vol. 5, p. 51, 1869 (part). Type, *S. perplana* Conrad, Amer. Journ. Conch., vol. 5, p. 48, pl. 9, figs. 7, 8, 1869.—DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1467, 1903.

CRASSATELLITES DEFORMIS Heilprin.

Plate 22, figs. 6, 7.

Crassatella deformis HEILPRIN, Trans. Wagner Inst., vol. 1, p. 117, pl. 16, fig. 63, 1887.

Crassatellites (*Scambula*) *deformis* DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1471, 1903.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Willcox, Heilprin, Post, and Dall. U. S. Nat. Mus. No. 165191.

Family CARDITIDAE.

Genus VENERICARDIA Lamarck.

Venericardia LAMARCK, Syst. des. Anim. s. Vert., 1801, p. 123. Type, *imbricata* Lamarck. Eocene.

Cardissa OKEN, Lehrb. d. Naturg., vol. 3, 1815, pp. viii, 232, 234; not Megerle, 1811.

Megacardita SACCO, Moll. Piem. Lig., vol. 27, 1899, p. 9. Type, *V. jouann* Basterot.

Venericardia DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1416, 1903.

VENERICARDIA SERRICOSTA Heilprin.

Plate 26, fig. 6.

Cardita (*Carditamera*) *serricosta* HEILPRIN, Trans. Wagner Inst., vol. p. 117, pl. 16, fig. 64, 1887.

Cardita *serricosta* DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1194, pl. 7, fig. 9, 1900.

Venericardia *serricosta* DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1416, 1903.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay and of Bailey's Mill Creek Sink, in Jefferson County, Florida. U. S. Nat. Mus. No. 165192.

All collectors who have visited the silex beds have obtained this species, which is one of the most common bivalves of that horizon, and, when silicified, one of the most elegant.

VENERICARDIA HIMERTA Dall.

Cardita (sp.) DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1196, pl. 7, fig. 16, 1900.

Venericardia *himerta* DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1430, pl. 53, fig. 12, 1903.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay and of the Oak Grove sands at Oak Grove, Santa Rosa County, Florida. U. S. Nat. Mus. No. 166109.

Genus CARDITA (Bruguière) Lamarck.

Cardita (part) BRUGUIÈRE, Encycl. Méth., vol. 1, p. 401, 1792.

Cardita LAMARCK, Prodr. Nouv. Class. Coq., 1799, p. 86. Sole example, *calyculata* Bruguière.—DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1416, 1903.

Section CARDITAMERA Conrad.

Carditamera CONRAD, Foss. Medial. Tert., p. 11, 1838. Type, *Cyprioceras arata* Conrad, 1832.—DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1416, 1903.

Lazaria GRAY, Ann. Mag. N. Hist., vol. 14, p. 22, 1854. Type, *L. radia* Reeve.

Lazariella SACCO, Moll. Piem. e Lig., 1899, p. 112. Type, *Cardita subulpa* Michelotti.

CARDITA (CARDITAMERA) TEGEA Dall.

Plate 17, fig. 1.

Cardita (*Carditamera*) *recta* DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 189, pl. 11, fig. 4, 1890; not of Conrad, 1868.

Cardita (*Carditamera*) *tegea* DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1412, 1903.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay; of the lower bed at Alum Bluff, Chattahoochee River; and of the Chipola marls near the county bridge, Chipola River, Calhoun County, Florida; Shepard, Burns, and Dall. U. S. Nat. Mus. No. 165194.

The figure is taken from a pseudomorph which was formed after a specimen perhaps somewhat worn before fossilization. The fresher specimens from Calhoun County are less smooth.

CARDITA SHEPARDI, new species.

Plate 21, figs. 10, 12.

Shell small, inflated, solid, subquadrate; beaks moderately elevated, situated in the anterior third of the shell; sculpture of (on the left valve about 21) elevated rounded ribs with deep, equal, or wider channeled interspaces; the ribs are ornamented with numerous prominent nodules rather sparsely distributed and on the posterior slope becoming more prominent and imbricated; anterior end rounded posterior subtruncate; base medially compressed; hinge as usual in the genus, rather delicate; inner margins of the valves crenulated by the sculpture. Length 9.75, height 6, diameter 6 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Post collection, U. S. Nat. Mus. No. 165193.

This little species is closely related to the recent *C. domingensis* of the West Indies.

Family CYRENIDAE.

Genus CYRENA Lamarck.

Cyrena (part) LAMARCK, Anim. s. Vert., vol. 5, p. 551 *bis*, 1818.—BOWDICH, Elem. Conch., vol. 2, p. 9, 1822.—ANTON, Verz. Conch., p. 13, 1839.

Cyrena SOWERBY, Gen. Shells, fasc. 5, 1822.—SWAINSON, Malac., p. 370, fig. 119a, 1840.—DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1441, 1903.

Type, *Cyrena bengalensis* Lamarck.

Section POLYMESODA Rafinesque.

Polymesoda RAFINESQUE, Ann. Gén. Sci. Phys. Bruxelles, 1820, p. 319.

Type, *Cyclas caroliniana* Bosc=*Cyrena carolinensis* Hanley.—MORCH, Malak. Blätt., vol. 7, p. 193, 1861; Journ. de Conchyl., vol. 9, p. 348, 1861.—PILSBRY, Nautilus, vol. 15, p. 48, 1901.—DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1442, 1903.

Leptostiphon FISCHER, ANN. Lyc. Nat. Hist. N. Y., vol. 10, p. 195, 1872.
Type, *Cyrena carolinensis* Hanley.

Cyprinella GABB, Pal. Cal., vol. 1, p. 170, 1864; not of Girard, 1856.

Diodus GABB, Pal. Cal., vol. 2, p. 242, 1868; new name for *Cyprinella* Gabb not Girard.

CYRENA (POLYMESODA?) POMPHOLYX Dall.

Plate 22, figs. 4, 5, 8.

Cyrena pompholyx DALL, TRANS. WAGNER INST., vol. 3, pt. 5, p. 1194, pl. 38, figs. 7, 8, 1900; pt. 6, p. 1445, 1903.

Tampa silex beds at Ballast Point, Tampa Bay, Florida; Dill, Wilcox, and Post. U. S. Nat. Mus. No. 165190.

This neat species is not at all uncommon in the silex beds and frequently beautifully preserved in a pseudomorph of translucent silex.

Genus VILLORITA Gray.

Villorita GRAY, in Griffith's Cuvier, Moll., p. 601, pl. 31, fig. 5, 1833. Type *Cyrena cyprinoides* Wood.

Villorita DALL, TRANS. WAGNER INST., vol. 3, pt. 6, p. 1451, 1903.

Villarita PHILIPPI, Handb. d. Conch., p. 315, 1853.

Vclorita GRAY, SYN. BRIT. MUS., pp. 75, 91, 1842 (nude name), *vide* Gray, Proc. Zool. Soc. Lond., 1847, p. 184; Ann. Mag. Nat. Hist., ser. 2, vol. 11, p. 38, 1853.—DESHAYES, Cat. Conch. Brit. Mus., vol. 2, p. 219, 1854.

VILLORITA FLORIDANA Dall.

Plate 17, figs. 9, 10; plate 18, figs. 8, 10, 11.

Vclorita floridana DALL, TRANS. WAGNER INST., vol. 3, pt. 5, p. 1190, pl. 43, figs. 8, 13, 1900.

Villorita floridana DALL, TRANS. WAGNER INST., vol. 3, pt. 6, p. 1452, 1903.

Tampa silex beds, from the ship channel off Ballast Point, Tampa Bay, Florida, from rock dredged up in deepening the channel, containing fossils which have not been silicified. Dall and Post. U. S. Nat. Mus. Nos. 107737, 214304.

As was stated in my original publication, this fossil has the conchological features of the recent species, the *V. cyprinoides* of Asia, but the combination is one which is probably due to dynamic causes operating upon a species of *Cyrena*, and which might occur sporadically anywhere within the distribution of the genus *Cyrena*. The Asiatic or African forms have probably no more intimate connection with the American fossils than that thus indicated, and the same is true of the fossil *Batissa* from the Puget Group and its South Sea analogue. The "genus" *Hinnites* is another form in which it is unlikely that there is any genetic connection between the species occurring in different horizons except what is furnished by the genus *Pecten*, from which *Hinnites* species are probably mere "sports."

Family CHAMIDAE.

Genus CHAMA (Linnaeus) Bruguière.

Chama LINNAEUS (part) Syst. Nat., ed. 10, p. 691, 1758. First species, *C. lazarus* Linnaeus (not of Lamarck).

Chama BRUGUIÈRE, Hist. Nat. des Vers., vol. 1, pt. 2, Encycl. Méth., vol. 6, pp. xlii, 1789, and 385, 1792.

Palopus OKEN, Lehrb. d. Naturg., p. 231, 1815.

Maceris MODEER, K. Vet. Ak. nya Handl., vol. 14, pp. 174, 182, 1793.

Planospirites LAMARCK, Anim. s. Vert., p. 400, 1801. Sole example, *P. ostracina* Lamarck (Cretaceous).

Goossensia COSSMANN, Journ. de Conchyl., vol. 33, p. 113, 1885; Cat. Illustr. bassin de Paris, vol. 2, p. 102, 1887. Type, *Cardita irregularis* Deshayes (= *Chama* sp. junior).

Chama DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1393, 1903.

CHAMA CHIPOLANA Dall.

Plate 25, figs. 9, 11.

Chama chipolana DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1398, pl. 56, figs. 19, 20, 1903.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay; of the lower bed at Alum Bluff, Chattahoochee River, Calhoun County; and of the Oak Grove sands, Santa Rosa County, Florida. Dall, Burns, and Aldrich. U. S. Nat. Mus. No. 165196.

CHAMA TAMPAËNSIS Dall.

Plate 24, fig. 1.

Chama tampaënsis DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1398, pl. 54, fig. 6, 1903.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Dall and Burns. U. S. Nat. Mus. No. 165195.

Rather common, but usually badly worn.

Family LUCINIDAE.

Genus CODAKIA Scopoli.

Codakia SCOPOLI, Intr. ad Hist. Nat., p. 396, 1777. (Type, *Chama codok* Adanson.)—DALL, Synopsis Lucinacea, 1901, p. 797; Trans. Wagner Inst., vol. 3, pt. 6, 1903, p. 1344.

Lenticularia SCHUMACHER, Essai, p. 147, 1817. Type, *Venus punctata* Chemnitz.

Orbiculus (sp.) MEGERLE, 1811, not *Orbicula* Lamarck 1799.

Lenticularia GRAY, Proc. Zool. Soc. London, 1847, p. 196.

Antilia DE GREGORIO, Bull. Soc. Malac. Ital. Pisa, vol. 10, p. 217, 1885. Type, *Venus tigrina* Linnaeus. Not *Antilia* Duncan (corals), 1864.

Codakia FISCHER, Man. de Conchyl., 1887 p. 1143.

Lenticularia BUCQUOY, DOLLFUS, and DAUTZENBERG, Moll. Roussillon, vol. 2, p. 635, 1898.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay, Florida, and of the Bowden marl of Jamaica, West Indies. Dall, Henderson, and Simpson. U. S. Nat. Mus. No. 157639.

Genus PHACOIDES Blainville.

Phacoides BLAINVILLE, Man. Malac., vol. 1, p. 540, 1825. Sole example, *Lucina jamaicensis* Lamarck.

Lucina LAMARCK, Syst. An. s. Vert., p. 124, 1801; not of Lamarck, Prodr. 1799.

Phacoides DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1359, 1903.

PHACOIDES DOMINGENSIS Dall.

Plate 23, fig. 9.

Phacoides domingensis DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1363, pl. 50, fig. 11, 1903.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay, Florida; of the Bowden marl of Jamaica, West Indies; and of the same horizon on the island in Lake Henriquillo, Santo Domingo. U. S. Nat. Mus. No. 165199.

This is the Oligocene precursor of the recent *P. pectinatus* Gmelin (*P. jamaicensis* Lamarck) and has been identified with the latter by Gabb and Guppy. It is, however, smaller, more inflated, with the notch in front of the anterior dorsal area more indented and angular, the concentric lamellation more distant and more evenly spaced, and the posterior dorsal area shorter in proportion and more triangular.

Subgenus HERE Gabb.

Here GABB, Pal. Cal., vol. 2, pt. 1, p. 29, 1866; pt. 2, p. 100, 1869. Type, *Lucina richthofeni* Gabb, Pal. Cal., vol. 2, pt. 1, p. 29, 1866.—DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1361, 1903.

Linga DE GREGORIO, Bull. Soc. Malac. Ital., vol. 10, p. 217, 1885. Type, *Lucina columbella* Lamarck.

Cardiolucina SACCO, Moll. Terz. Piem. e Lig., vol. 29, p. 89, 1901. Type, *Lucina agassizii* Michaux.

PHACOIDES (HERE) WACISSANUS Dall.

Plate 23, fig. 12.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay, and of the limestone at Wacissa, Jefferson County, Florida. U. S. Nat. Mus. No. 165200.

Rather common at Ballast Point.

Lucina bellucina Dall.

Jap.

(LUCININA) TAMPAENSIS, new species.

Plate 21, figs. 1, 2.

moderately plump, equivalve, slightly
 beaks small, low, closely adjacent,
 anterior dorsal slope excavated with a deeply
 smooth and large for the size of the shell;
 with a narrow, hardly depressed lanceolate
 area compressed, bordered below by a
 is indicated at the posterior margin by a
 end broadly rounded, posterior subtrun-
 beaks slightly nearer the posterior end of
 of (on the type-specimen eleven) rather
 ribs separated by narrower intervals, the
 and then narrower; concentric sculpture of
 beellae, more crowded on the beaks and near
 in the middle of the valves, overriding the
 of the valves with a strongly crenulate
 possible. Length of shell 5 mm., beaks behind
 height 4 mm., diameter 2.5 mm.
 Ballast Point, Tampa Bay, Florida.

the Post collection, U. S. Nat. Mus. No.
 Th.

Lucina cavilucina Fischer.

though round
 J. de Conchyl., 1887, p. 1143. Type, *Lucina sulcata*
 Trans. Wagner Inst., vol. 3, pt. 6, p. 1361, 1903.

(LUCININA) RECURRENS Dall.

Plate 24, fig. 3.

My

recurrens DALL, Trans. Wagner Inst., vol. 3, pt.
 12, 1903.

Oyr.

Ort.

My

beds at Miami; of the lower bed at Alu
 of the Chipola marl on the Chip
 Florida; and of the Bowden beds, Jamaic
 Mus. No. 114685.

Lucina lucinisca Dall.

Enl

Proc. U. S. Nat. Mus., vol. 23, p.
Lucina nassula Conrad.—DALL, Trans. W
 1901, 1903.

(LUCININA) PLESIOLOPHUS Dall.

DALL, Trans. Wagner Inst., vol.
 23, 1903.

My

Florida, and the Tampa silex be

PHACOIDES (LUCINISCA) CALHOUNENSIS Dall.

Plate 24, fig. 5.

Phacoides (Luciniscia) calhounensis DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1371, pl. 52, fig. 16, 1903.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay, and of the Chipola marl at the county bridge, Chipola River, Calhoun County, Florida. U. S. Nat. Mus. No. 165201.

The Ballast Point specimens were badly worn before fossilization, and present a different aspect from the perfectly preserved specimens from the Chipola marl.

Subgenus MILTHA H. and A. Adams.

Miltha H. and A. ADAMS, Gen. Rec. Moll., vol. 2, p. 468, 1857. Sole example, *Lucina childrenae* Gray.—DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1374, 1903.

PHACOIDES (MILTHA) HILLSBOROËNSIS Heilprin.

Plate 19, fig. 5.

Lucina hillsboroënsis HEILPRIN, Trans. Wagner Inst., vol. 1, pp. 117, 120, pl. 16, fig. 62, 1887.

Phacoides (Miltha) hillsboroënsis DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1376, 1903.

Oligocene of the Tampa silex beds, Ballast Point, Tampa Bay; of the lower bed at Alum Bluff, Chattahoochee River; and of the Chipola marl, Chipola River, Calhoun County, Florida. Heilprin, Burns, and Dall. U. S. Nat. Mus. No. 114706.

PHACOIDES (MILTHA) HERACLEUS Dall.

Phacoides heracleus DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1376, pl. 51, fig. 10, 1903.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay, and of the lower bed at Alum Bluff, Chattahoochee River, Calhoun County, Florida. Dall and Burns. U. S. Nat. Mus. No. 114425.

This is a large species, recalling the *Pseudomiltha gigantea* of the Parisian Eocene, but the teeth are developed. Only one right valve and a fragment have been so far collected.

Family DIPODONTIDAE.

Genus DIPODONTA Bronn.

Dipodonta BRONN, Ital. Tert. geol., p. ix, 1831. Type, *Venus lupinus* Brocchi, not *Dipodon* Spix, 1827.

Myia BROWN, Zool. Textb., p. 454, pl. 90, fig. 6, 1833; also of Sowerby, 1842, and Conrad, 1838, but not of Leach, in Lamarck, 1818.

Gecomene LEACH, Moll. Gt. Britain, p. 313, 1852.

Cycladicama VALENCIENNES, Voy. au Pole Sud, vol. 5, p. 116, 1854.

Mittrea GRAY, Fig. Moll. An., vol. 5, p. 35, 1857.

? *Taras* RISSO, Hist. Nat. Eur. MÉR., vol. 4, 1826, p. 344, pl. 12, fig. 167. Type, *T. antiquatus* RISSO (Tertiary).

Diplodonta DALL, Proc. U. S. Nat. Mus., vol. 23, No. 1237, p. 792, 1901; Trans. Wagner Inst., vol. 3, pt. 6, pp. 1178, 1179, 1903.

DIPLODONTA ALTA Dall.

Plate 24, fig. 8.

Diplodonta alta DALL, Trans. Wagner Inst., vol. 3, pt. 1, p. 189, pl. 11, figs. 9a, 9b, 1890 (poor); pt. 6, p. 1183, pl. 44, fig. 19 (good), 1903.

Oligocene of the Tampa silex beds, Ballast Point, Tampa Bay; of the lower bed at Alum Bluff, Chattahoochee River; and of the marl of the Chipola River, near the county bridge, Calhoun County, Florida. U. S. Nat. Mus. No. 155745.

The first figures of this species were made from a defective specimen that was discarded in favor of a more perfect one from the Chipola marl.

DIPLODONTA CATOPOTIUM, new species.

Plate 18, fig. 9.

Shell small, thin, almost spherical, smooth except for concentric incremental lines, which are irregular and rude; beaks almost central, low, smooth, with hardly any trace of a lunular depression in front of them and only a very narrow chink for the ligament behind them; interior inaccessible, but from what can be seen of the margins they are probably entire. Height of shell 8 mm., length 8 mm., diameter 7 mm.

Tampa silex beds, one specimen. U. S. Nat. Mus. No. 166111.

This species has much the form of *D. turgida* Conrad (not Verrill); but its beaks are lower and the impressed lunular area of *D. turgida* is wanting.

Section PHLYCTIDERMA Dall.

Phlyctiderma DALL, Journ. Conch. (Leeds), vol. 9, No. 8, 1899, p. 246. Type, *Diplodonta semiaspera* Philippi (recent, Havana, Cuba); Proc. U. S. Nat. Mus., vol. 23, No. 1237, p. 792, 1901.

DIPLODONTA (PHLYCTIDERMA) PUNCTURELLA Dall.

Diplodonta puncturella DALL, Journ. Conch. (Leeds), vol. 9, No. 8, Oct. 1899, pp. 245-6.

Diplodonta (Phlyctiderma) puncturella DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1183, pl. 45, fig. 26, 1903.

Oligocene of the Bowden beds, Jamaica, West Indies, and of the Tampa silex beds at Ballast Point, Tampa Bay, Florida. Recent, Jamaica, Porto Rico, and St. Thomas, West Indies. U. S. Nat. Mus. No. 165203.

The punctuation of the surface of this small species is very close regular, not pustulose like most of the species of this section.

Family LEPTONIDAE.

Genus ERYCINA (Lamarck) Recluz.

Erycina (part) LAMARCK, Ann. du Museum, vol. 6, p. 413, 1806 (heterogeneous assembly). Not *Erycina* Fabricius, 1808.

Erycina RECLUZ, Revue Zool., vol. 7, pp. 291, 325, 1844. Type, *E. pellucida* Lamarck. Not *Erycina* Philippi, 1836, (= *Abra*) nor *Erycina* Brown, 1833, (= *Atactodea*).

Neacromya GABB, Trans. Amer. Philos. Soc., vol. 15, p. 247, 1873; Proc. Acad. Nat. Sci. Phila. for 1872, p. 274, 1873. Type, *N. quadrata* Gabb, Trans. Amer. Philos. Soc., vol. 15, pl. 10, figs. 4, 4^a, 4^b.

Erycina DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1140, 1900.

ERYCINA? INDECISA, new species.

Plate 21, figs. 5, 8.

Shell small, smooth, inflated, somewhat recalling *Lasea rubra* in form but more elongate behind; anterior end shorter and more inflated than the longer portion behind the prominent beaks; interior obscured by matrix. Length 4, height 3, maximum diameter 2 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida, one specimen. U. S. Nat. Mus. No. 165197.

This has the aspect of an *Erycina*, but from the fact that the interior and the hinge are unknown, its true relations must remain in doubt pending the receipt of more material.

Genus BORNIA Philippi.

Bornia PHILIPPI, Moll. Stell., vol. 1, p. 13, 1836. Type, *Bornia corbuloides* (Bivona) Philippi.

BORNIA TAMPÆ, new species.

Plate 18, fig. 6.

Shell small, rounded-quadrate, with low, nearly central umbones; the base gently arcuate, the ends subequally rounded, surface smooth, valves rather compressed, the interior inaccessible. Length of shell 6, height 5, maximum diameter 3 mm.

Tampa silex beds, one specimen. U. S. Nat. Mus. No. 166112.

This species recalls *B. triangula* (Lea) Dall, but is more rounded and has more prominent beaks.

Family CARDIIDAE.

Genus CARDIUM (Linnaeus) Bruguière.

Cardium LINNAEUS, Syst. Nat., ed. 10, p. 678, 1758; Mus. Lud. Ulricae, p. 483, 1764. No type selected.

Pectunculus HUDDSFORD, in Lister, Conch. Index, Anat., p. 5, expl. pl. 13, fig. 1, 1770. Sole example, *Cardium edule* Linnaeus (= *Cardium* Linnaeus).

Cardium MÜLLER, Zool. Dan. Prodr., p. 246, 1776.—BOLTEN, Mus. Boltensianum, ed. 1, p. 189, 1798; ed. 2, pp. 132-34, 1819.—BRUGUIÈRE, Encycl. Méth., vol. 1, pp. 203, 235, 1789.—LAMARCK, Prodrôme, p. 86, 1799, sole example, *C. aculeatum* Linnaeus.—DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1069, 1900.

Subgenus *TRACHYCARDIUM* Mörch.

Trachycardium MÖRCH, Yoldi Cat., vol. 2, p. 34, 1853. Type, *C. isocardia* Linnaeus.

Granocardium GABB, Pal. Cal., vol. 2, p. 266, 1868, *C. sabulosum* Gabb.

CARDIUM (TRACHYCARDIUM) DELPHICUM Dall.

Plate 25, fig. 12.

Cardium (Trachycardium) delphicum DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1084, pl. 48, fig. 18, 1900.

Oligocene of the Tampa silex beds, Ballast Point, Tampa Bay, and of the Oak Grove sands, Oak Grove, Santa Rosa County, Florida. U. S. Nat. Mus. No. 157526.

The type of the species is the Oak Grove fossil; those supposed to be specifically the same from the silex beds are poorly preserved and are referred to this species with some doubt.

The figure is taken from an Oak Grove specimen.

CARDIUM (TRACHYCARDIUM) PROPECILIARE Dall.

Plate 18, fig. 7.

Cardium propeciliare DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1080, pl. 48, fig. 12, 1900.

Tampa silex beds at Ballast Point, Tampa Bay, and in the Oligocene marl of the Chipola River, Calhoun County, Florida. Post and Dall. U. S. Nat. Mus. No. 165205.

CARDIUM (TRACHYCARDIUM) CESTUM Dall.

Plate 4, fig. 13.

Cardium (Trachycardium) cestum DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1083, pl. 48, fig. 14, 1900.

Tampa silex beds, at Ballast Point, Tampa Bay, and in the Oligocene marl of the Chipola River, Calhoun County, Florida. Post and Burns. U. S. Nat. Mus. No. 165206.

This profusely ornamented species was first found at Chipola, but later Mr. Post sent specimens from the silex beds which proved to be identical though in less perfect condition.

CARDIUM (TRACHYCARDIUM) BOWDENENSE DALL.

Cardium muricatum GUPPY, Geol. Mag., dec. 2, vol. 1, p. 450, 1874; not of Linnaeus, 1758.

Cardium (Trachycardium) bowdenense DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1087, 1900.

Oligocene of the Bowden beds, Jamaica, West Indies, and of the Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 165204.

This species resembles *C. muricatum* in general characters and has about the same number of ribs, but all its characters are as it were in miniature; the shell is smaller and all the details are smaller. The true *C. muricatum* is more inflated proportionally and has the ribs less crowded and compressed. Moreover, it does not appear as a fossil earlier than the Pleistocene so far as known.

CARDIUM (TRACHYCARDIUM) PARILE DALL.

Plate 4, fig. 6.

Cardium (Trachycardium) parile DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1086, pl. 48, fig. 17, 1900.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay; of the lower bed at Alum Bluff, Chattahoochee River; and of the marls of the Chipola River near the county bridge, Calhoun County, Florida. U. S. Nat. Mus. No. 165208.

CARDIUM (TRACHYCARDIUM), spp. indet.

Fragments of what appear to be two undetermined species of *Trachycardium* have been found at Ballast Point, but not in a condition to be named.

Subgenus CERASTODERMA Mörch.

Cerastoderma MÖRCH, Yoldi Cat., vol. 2, p. 34, 1853.—ROEMER, Conchyl. Cabinet, ed. 2 (*Cardium*), p. 4, 1868.—MEEK, Pal. Upper Missouri, p. 106, 1876; *C. edule* Linnaeus.

Cardium GRAY, List Brit. Anim., p. 25, 1851; not of Lamarck, 1799.

Paricardium MONTEROSATO, Sin. Conch. Medit., p. 19, 1884.

Pectunculus HUDDSFORD, in expl. to plate 13, of Lister, Conch. ed. of 1770. Sole example, *Cardium edule*.

If the rules of nomenclature were strictly observed it may be that the name *Pectunculus* might have to be adopted for the group typified by *Cardium edule*, as his use of it is probably the earliest binomial adoption of this name which was applied by the classic writers to any rounded inflated bivalve. But this name has been so much used for different groups of bivalves and has created so much nomenclatorial confusion that, considering that Huddesford's

conception of the genus would probably have been synonymous with *Cardium* Linnaeus in its broad sense, it seems better to ignore this instance of its use.

Section *DISCORDIUM* Dall.

Discordium DALL, Trans. Wagner Inst., vol. 3, pt. 5, pp. 1074, 1907, 1908.

Type, *Cardium robustum* Schander (*C. magnum* Born not Linnaeus).

CARDIUM (*CERASTODERMA*) *PHLYCTAENA* Dall.

Plate 25, fig. 19.

Cardium (*Cerastoderma*) *phlyctena* DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1097, pl. 43, fig. 12, 1909.

Tampa silix beds at Ballast Point, Tampa Bay, Florida. Wilcox and Dall. U. S. Nat. Mus. No. 165207.

CARDIUM (*CERASTODERMA*) *TAPHRIUM* Dall.

Plate 19, fig. 3.

? *Cardium* (*Cerastoderma*) *taphrium* DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1098, pl. 40, fig. 9, 1909.

Oligocene of the Tampa silix beds ! and of the Oak Grove sands of Oak Grove, Santa Rosa County, Florida. U. S. Nat. Mus. No. 157576.

The species and figure are based on Oak Grove specimens, the pseudomorph from the silix beds being so poorly preserved that identification is doubtful.

Subgenus *FRAGUM* Bolten.

Fragum BOLTEN, Mus. Boltenianum, ed. 1, p. 189, 1798; ed. 2, p. 131, 1811 (*C. unedo* Linnaeus).—Mösch, Yoldi Cat., vol. 2, p. 35, 1853.—DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1074, 1900.

Hemicardium SWAINSON, Mal., p. 373, 1840, after Cuvier, Règne Anim. vol. 2, p. 479, 1817, emend.

Bucardium GRAY, Ann. Mag. Nat. Hist., 1853, p. 40; not of Megerle, 1811.

Lowocardium COSSMANN, Cat. Illustr., p. 160, 1887.

Section *TRIGONIOCARDIA* Dall.

Trigoniocardia DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1075, 1900. Type *Cardium graniferum* Sowerby.

CARDIUM (*TRIGONIOCARDIA*) *ALICULA* Dall.

Plate 25, fig. 8.

Cardium (*Trigoniocardia*) *alicula* DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1108, pl. 40, fig. 12 (only), 1900.

Oligocene of the Tampa silix beds, Ballast Point, Tampa Bay and of the lower bed at Alum Bluff, Chattahoochee River, Florida. Wilcox and Burns. U. S. Nat. Mus. No. 165209.

CARDIUM (TRIGONIOCARDIA) BERBERUM, new species.

Cardium (Trigoniocardia) alicula (part) DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1103, pl. 48, fig. 5, 1900 (not pl. 40, fig. 12).

Oligocene of Tampa silex beds and of the lower bed at Alum Bluff, Florida, and of the Chipola River marl, Calhoun County, Florida. U. S. Nat. Mus. No. 166113.

When first described it was thought that the Ballast Point specimen of *C. alicula* was worn and that its differences from the Chipola form were due to erosion. The recovery of a well-preserved valve from the silex beds, together with specimens of the Chipola form, has enabled a more exact comparison to be made, which shows that the form from the Chipola marl beds is distinct. It may be recognized by its more narrow form and by the very conspicuous denticulation of the margin of the truncated end of the valves. *C. alicula*, so far as known, is confined to the Ballast Point horizon, but the present species is present also at Chipola. The Ballast Point specimens are U. S. Nat. Mus. No. 166113.

Family VENERIIDAE.

Genus DOSINIA Scopoli. .

Dosinia SCOPOLI, Intr. ad Hist. Nat., p. 399, 1777. Type, *Le dosin* Adanson, = *Dosinia africana* Hanley.

Artemis OKEN, Lehrb. der Naturg., p. 229, 1815. *Venus exoleta* Linnaeus.

Artemis CONRAD, Fos. Tert. Form., p. 20, 1832.

Arctœ RISSO, Eur. Mérid., vol. 4, p. 361, 1828. *Venus exoleta* Linnaeus.

Exoleta BROWN, Ill. Conch. Gt. Brit., pl. 20, figs. 2, 3, 1827. *Venus exoleta* Linnaeus.

Cerana GISTEL, Naturg. Thier., p. 8, 1848.

Amphithæa LEACH, Syn. Brit. Moll., p. 312, 1852.

Dosinia DESHAYES, Cat. Brit. Mus., p. 5, 1853.—DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1228, 1903; not *Dosinia* Gray, 1838.

Section DOSINIDIA Dall.

Dosinidia DALL, Proc. U. S. Nat. Mus., vol. 26, No. 1312, p. 347, 1902.

Type, *Venus concentrica* Born; Trans. Wagner Inst., vol. 3, pt. 6, p. 1229, 1909.

DOSINIA (DOSINIDIA) CHIPOLANA Dall.

Plate 24, fig. 10.

Dosinia (Dosinidia) chipolana DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1229, pl. 54, fig. 4, 1903.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay; and of the Chipola marl, near the county bridge, Chipola River, Calhoun County, Florida. U. S. Nat. Mus. No. 214408.

1877

MUSEUM.

1879, 1876. Type, Venus
Inst., vol. 3, pt. 6, p. 1251.

179, 1876. Type, Venus
Inst., vol. 3, pt. 6, p. 1251.

1879

1879

S, p. 197. Apr. 1909; U. S.
120, new name for *Chionella*

de Paris, vol. 1, p. 105, 1886. Type,
Swainson, Malac., p. 335.

1879

Tampa
and Dall.

ACUMINATA Dall.

Plate 24, figs. 2.

Trans. Wagner Inst., vol. 3, pt. 6, p. 1255.

Oligo-
of Oak
157570
The
pseud-
identi

beds. Ballast Point, Tampa Bay;
Bluff, Chattahoochee River, Florida
183313.

Conrad, of the Miocene, but is
more acute behind.

CARDIA A. Adams.

Mag. Nat. Hist., ser. 3, vol. 13, p. 307, 1864

Blatt., vol. 9, p. 55, 1852; not *Carpatis* Hul

Comp. Zool., vol. 12, p. 275, Sept. 1880

Illustr. bassin de Paris, vol. 1, p. 98, Oct. 1880

s Nat. Mus., vol. 26, No. 1312, p. 353, 1902
& pt. 6, p. 1259, 1903.

AGRIOPOMA Dall.

s Nat. Mus., vol. 24, p. 509, 1902. Type, *Cythere*
Trans. Wagner Inst., vol. 3, pt. 6, p. 1259, 1903.

AGRIOPOMA) SINCERA Dall.

Plate 25, fig. 7.

AGRIOPOMA) SINCERA DALL. Trans. Wagner Inst., vol. 3, pt.

Da

Tampa siliceous beds at Ballast Point, Tampa Bay
Bluff, Chattahoochee River; and of th

Chipola marl, near the county bridge, Chipola River, Calhoun County, Florida. - U. S. Nat. Mus. Nos. 166114, 114747.

This species, though smaller and with more sharply cut sculpture, may be regarded as the precursor of the Miocene *C. sayana*.

? *CALLOCARDIA NUX*, new species.

Plate 18, fig. 3.

Shell small, equivalve, the beaks near the anterior third, moderately convex, short-ovate, the surface smooth except for faint incremental lines; beaks low, pointed, prosocoealous, a large lanceolate lunule in front of them which is not impressed but circumscribed by a sharply incised line; there is no escutcheon; anterior slope roundly descending, ends of the shell evenly rounded, base prominently arcuate; anterior inaccessible. Height of shell 12, length 14, diameter 7 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 166115.

This simple little shell has no pronounced characteristics but is distinct from any of the other Veneridae known from this or adjacent formations.

Genus *ANTIGONA* Schumacher.

Cytherea BOLTEN, (part) Mus. Boltenianum, ed. 1, p. 177, 1798; ed. 2, p. 124, 1819. *Venus puerpera* Linnaeus. Not *Cytherea* Fabricius (*Diptera*) 1795, Lamarck, 1806, nor H. and A. Adams, 1856.

Dosinia GRAY, Analyst, vol. 8, p. 308, 1838; Proc. Zool. Soc. London, for 1847, p. 183. *Venus verrucosa* Linnaeus.

Clausina BROWN, Ill. Conch. Gt. Brit., expl. pl. 19, 20, 1827; ed. 2, 1844, pp. 90, 91. *V. verrucosa* Linnaeus.

Omphalocladum MÖRCH, Yoldi Cat., vol. 2, p. 25, 1853.

Venus SWAINSON, Mal., p. 372, fig. 119c, 1840. *V. verrucosa* Linnaeus, not of Lamarck, 1799.

Callista FISCHER, Man. de Conchyl., p. 1084, 1887, *V. verrucosa* Linnaeus, not *Callista* Mörch, 1853.

Cytherea DALL, Proc. U. S. Nat. Mus., vol. 26, No. 1312, p. 354, 1902; Trans. Wagner Inst., vol. 3, pt. 6, p. 1271, 1903. Type, *Venus puerpera* Linnaeus.

ANTIGONA TARQUINIA Dall.

Plate 26, figs. 1, 2.

Venus magnifica HEILPRIN, Trans. Wagner Inst., vol. 1, p. 116, 1886; not of Sowerby, 1853.

Venus tarquinia DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1194, pl. 38, figs. 2, 2a, 1900.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay, Florida (Willcox and Dall), and of Santo Domingo (Gabb). U. S. Nat. Mus. No. 109233.

Subgenus *ANTIGONA* sensu strictu.

- Antigona* SCHUMACHER, Essai, pp. 51, 154, 1817. Sole example, *A. lamellaria* Schumacher, Essai, pl. 14, fig. 2, *Dosinia lamarckii* Gray, 1838; now *Antigonus* Hubner, 1820 (*Lepidoptera*).—DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1273, 1903.
- Artena* CONRAD, Amer. Journ. Conch., vol. 6, p. 76, 1870. *Venus staminea* Conrad.—FISCHER, Man. de Conchyl., p. 1084, 1887.
- Artena* TRYON, Syst. Conch., vol. 3, p. 178, 1884.

In my discussion of this group in the Wagner Transactions I did not regard the difference of termination between *Antigona* and *Antigonus* as creating a synonym, but the usage has become fixed that it is inadmissible. The name of Schumacher will take precedence for the genus, while for the section the name of Conrad may be retained.

ANTIGONA GLYPTOCONCHA Dall.

Plate 25, fig. 1.

- Cytherea (Artena) glyptoconcha* DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1277, pl. 55, fig. 24, 1903.
- Cytherea staminea* HEILPRIN, Trans. Wagner Inst., vol. 1, p. 116, 1887, non of Conrad, 1839.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Willcox, Burns, and Dall. U. S. Nat. Mus. No. 165213.

This rather abundant species has the general aspect of *Lirophora*, the minute sculpture of *Artena*, and the hinge of *Antigona*. It varies remarkably in outline, as I have shown in the Wagner Transactions.

Section *ARTENA* sensu strictu.*ANTIGONA (ARTENA) SHEPARDI* Dall.

Plate 25, fig. 4.

- Cytherea (Artena) shepardi* DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1278, pl. 55, fig. 16, 1903.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay and of the limestone of Hillsboro Bay near by, in Florida. Shepard, Willcox, Post, and Dall. U. S. Nat. Mus. Nos. 165212, 166116.

This species recalls *C. ucuttana* in sculpture, but has the *Chione* shape of *Artena*.

Genus *CHIONE* Megerle von Muhlfeldt.

- Chione* MEGERLE, Mag. Ges. Naturf. Freunde zu Berlin, vol. 5, p. 51, 1811.
- Venus cancellata* (Linnaeus) Lamarck. Not *Chione* Desvoldy, 1830, non of Gray, 1838.
- Chione* DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1286, 1903.

Section LIROPHORA Conrad.

Lirophora CONRAD, Proc. Acad. Nat. Sci. Phila. for 1862, pp. 575, 586, 1863;
Venus athleta Conrad, Dall, Trans. Wagner Inst., vol. 3, pt. 6, pp. 1286,
 1293, 1903.

CHIONE (LIROPHORA) BALLISTA Dall

Plate 25, fig. 3.

Chione (Lirophora) ballista DALL, Trans. Wagner Inst., vol. 3, pt. 6,
 p. 1295, pl. 55, fig. 23, 1903.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Crosby,
 Burns, and Dall. U. S. Nat. Mus. No. 165216.

Section CHAMELEA Mörch.

Chamelea MÜRCH, Cat. Yoldi, vol. 2, p. 23, 1853. *Venus gallina* Linnaeus.
 DALL, Trans. Wagner Inst., vol. 3, pp. 1289, 1300, 1903.

CHIONE (CHAMELEA) NUCIFORMIS Heilprin.

Plate 25, fig. 5.

Cytherea nuciformis HEILPRIN, Trans. Wagner Inst., vol. 1, p. 116, pl. 16,
 fig. 61, 1887.

Chione (Chamelea) nuciformis DALL, Trans. Wagner Inst., vol. 3, pt. 6,
 p. 1300, pl. 55, fig. 9, 1903.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Shepard,
 Heilprin, and Dall. U. S. Nat. Mus. No. 165215.

One of the more common species of the locality.

CHIONE (CHAMELEA) SPADA Dall.

Plate 24, fig. 12.

Chione (Chamelea) spada DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1301,
 pl. 55, fig. 13, 1903.

Oligocene of the Tampa silex beds, Ballast Point, Tampa Bay
 (Burns, Dall, and Crosby), and of Bailey's Mill Creek sink, Florida
 (L. C. Johnson). U. S. Nat. Mus. No. 109240.

This species is less common than the preceding one.

CHIONE (CHAMELEA) RHODIA Dall.

Plate 25, fig. 6.

Chione (Chamelea) rhodia DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1301,
 pl. 55, fig. 10, 1903.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay,
 and of the Oak Grove sands, Santa Rosa County, Florida. Dall
 and Burns. U. S. Nat. Mus. No. 109229. This species, though with
 a much greater range in time than the others, seems to be com-
 paratively rare.

Antigona SCHUMMELER, 1834, 18
Schumme 1 for 184
Antigona same type.
 vol. 3, 1853.
Artena Cuv.
 Conr.
Artania T. Brit. Mus., vol.
 2, 1850, 1852.
 In my dis- *Antigona* H.
 not regard
Antigonus FLORIDANA Conr.
 that it is
 ence for
 retained.

Cyt siliceous beds at Ballast I
 Limestone; of the lir
Cyt Sopchoppy, Florida. li
 No. 165214.
 Tai characteristic, and old
 cox. I erous variations of for
 Th sactions.
 the described at the same time
 vari- not been recently identifi
 acti- cally, with *A. floridana*
 differences.

GENUS (Linnaeus) Lamarck
 Syst. Nat., ed. 10, p. 685, 1758
 Brit. Conch., p. 184, 177.
 Index, p. 5, expl. pl.
 1758.
 p. 84, 1799. Sole example
 Wagner Inst., vol. 3, pt. 6, p.
 Essai, pp. 45, 135, 1817, s.
 Boston Soc. Nat. Hist.,
 sl.

GENUS HALIDONA Dall.

figs. 3, 5.

Wagner Inst., vol. 3, p.
 1907, 1903.

siliceous beds at Ballast I
 Hillsboro Bay in Tampa Bay, Florida
 No. 165217.

This is one of the largest and least common of the silex bed fossils, and has the rough area of the hinge, characteristic of the genus, quite small, compared with the Miocene and recent species of which it is one of the precursors. A nearly allied but apparently distinct species is the *V. langdoni* of the lower bed at Alum Bluff.

Family TELLINIDAE.

Genus TELLINA (Linnaeus) Lamarck.

Tellina (part) LINNAEUS, Syst. Nat., ed. 10, p. 674, 1758; ed. 12, p. 1116, 1767.

Tellina LAMARCK, Prodrôme, p. 84, 1799. Sole example *Tellina virgata* LINNAEUS.—DALL, Proc. U. S. Nat. Mus., vol. 23, No. 1210, p. 289, 1900; Trans. Wagner Inst., vol. 3, pt. 5, p. 1004, 1900.

Eutellina FISCHER, Man. de Conchyl., p. 1147, 1887.

Subgenus TELLINA sensu strictu.

Tellina DALL, Trans. Wagner Inst., vol. 3, pt. 6, p. 1009, 1903. Type, *Tellina virgata* Linnaeus.

TELLINA SEGREGATA Dall.

Plate 17, fig. 3, 11.

Tellina segregata DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1019, pl. 37, figs. 7, 8, 1900.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. Dall. U. S. Nat. Mus. No. 157847.

This species seems to group with the following form, but the character of the sculpture is quite different.

TELLINA CHIPOLANA Dall.

Plate 22, figs. 1, 2.

Tellina chipolana DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1018, pl. 47, fig. 6, 1900.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay (Post); of the lower bed at Alum Bluff, Chattahoochee River; and of the Chipola marl, near the county bridge over the Chipola River, Calhoun County, Florida. U. S. Nat. Mus. No. 165219.

TELLINA DIRA, new species.

Small, thin, posterior end slightly bent to the right, elongate, beaks slightly behind the middle of the shell; beaks not prominently projecting, smooth; remainder of the shell sculptured with sharp, elevated lamellae, which are obsolete on the posterior slope; the shell shows no radial sculpture; dorsal slopes about

equally descending; anterior end longer, evenly rounded into base, which is arcuate and rather prominent mesially; posterior bluntly rounded and attenuate; interior with the pallial mark obscured; hinge with two strong laterals and two adjacent cardinal teeth, of which the posterior is larger and grooved. Length 11, height 9, double diameter 2.75 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 165220.

A single right valve was received too late for figuring, but the species is well marked.

Section **MACALIOPSIS** COSSMANN.

Macaliopsis COSSMANN, Cat. Illustr. bassin de Paris, p. 63, 1886.

Tellina barrandei Deshayes.—DALL, Trans. Wagner Inst., vol. 3, p. 1010, 1900.

TELLINA (MACALIOPSIS) MERULA DALL.

Plate 24, fig. 7.

Tellina (Macaliopsis) (?) merula DALL, Trans. Wagner Inst., vol. 3, p. 1019, pl. 46, fig. 4, 1900.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 157848.

The species recalls *T. mera* Say, but is of different form.

Subgenus **ARCOPAGIA** LEACH.

Arcopagia LEACH, in Brown, Ill. Conch. Gt. Britain, p. 11, pl. 16, 1827; *Tellina crassa* Montague.—DALL, Trans. Wagner Inst., vol. 3, p. 1011, 1900.

Cydippe LEACH, Moll. Gt. Brit., p. 314, 1852; same type.

Section **MERISCA** DALL.

Merisca DALL, Proc. U. S. Nat. Mus., vol. 23, No. 1210, p. 290. Type, *T. crystallina* Wood.—DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1021, 1900.

TELLINA (MERISCA) HALIDONA DALL.

Plate 23, figs. 1, 3.

Tellina (Merisca) halidona DALL, Trans. Wagner Inst., vol. 3, p. 1021, pl. 38, figs. 3, 3a, 1900.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 157856.

Only a single left valve of this species is known.

Subgenus *ANGULUS* (Megerle) Dall.

Angulus (part) MEGERLE VON MUELFELDT, Mag. der Ges. Naturf. Freunde zu Berlin, vol. 5, p. 47, 1811. *Tellina lanceolata* Linnaeus and *T. virgata* Linnaeus.

Angulus DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1014, 1900. Type, *T. lanceolata* Linnaeus.

Fabulina GRAY, Brit. Moll. Brach., p. 40, 1851; *Tellina fabula* Gronovius. *Tellinula* HUCQUOY, DAUTZENBERG, and DOLLFUS, Moll. Mar. de Roussillon, vol. 2, p. 654, 1898; same type.

TELINA (*ANGULUS*) *ATOSSA* Dall.

Plate 4, fig. 11.

Shell egg-ovate, thin, rather compressed, nearly equilateral, with low subcentral beaks; anterior end full, rounded; posterior end compressed, attenuated, almost rostrate; anterior dorsal slope moderately convex, posterior slope straight; surface nearly smooth except toward the margins where the incremental lines rise into low sharp lamellae with flattish interspaces; there is no radial sculpture, and neither lunule nor escutcheon; hinge of the right valve with two cardinal teeth the posterior large and bifid, an anterior larger lateral, and a more distant smaller posterior lateral tooth; pallial sinus large, coincident with the pallial line below, and not reaching the anterior adductor scar. Length of shell 21, height 14, diameter (estimated) 7 mm.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida, one right valve. U. S. Nat. Mus. No. 166118.

This shell belongs to the type of *A. decumbens* Carpenter, a recent Panama form, and is very distinct from any other.

Genus *MACOMA* Leach.

Macoma LEACH, in ROSS Voy., app. 2, p. lxii, 1819 (*M. tenera* Leach); Journ. de Physique, vol. 88, p. 465, June, 1819.—DALL, Proc. U. S. Nat. Mus., vol. 23, No. 1012, p. 292, 1900; Trans. Wagner Inst., vol. 3, pt. 5, p. 1044, 1900. Type, *M. calcarea* Gmelin.

Limicola LEACH, Moll. Gt. Brit., p. 296, 1852; not of Koch, *Aves*, 1816.

MACOMA IRMA Dall.

Plate 24, fig. 9.

Macoma irma DALL, Trans. Wagner Inst., vol. 3, pt. 5, p. 1047, pl. 46, fig. 15, 1900.

Tampa siliceous beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 157906.

The specimens, though imperfect, belong to this genus, and to a species distinct from any other in the present list.

Family SEMELIDAE.

Genus SEMELE Schumacher.

Semele SCHUMACHER, *Reise*, p. 265, 1857. Type, *Tellina reticulata* Speng.
~~Reise~~ *Reise*, p. 265, 1857.

Semele LAMARCK, *Ann. s. Vert.*, vol. 5, p. 490, 1818.—BOWDICH

Ann. Conch., vol. 2, p. 5, pl. 2, fig. 15, 1832. Type, *Tellina variegata*.

LAMARCK, *Reise*, p. 265, 1857. Type, *Tellina purpurascens* Gmelin.

Semele DALL, *Trans. Wagner Inst.*, vol. 28, p. 122, 1901; *S. plicatoides* DALL.

SEMELE SANDWICHICA, new species.

PLATE 23, FIG. 4, 5.

Shell small, from the beaks behind the middle of the shell and intransparant; lunule deep and narrow; escutcheon confined to the back valve, very narrow, longer than the lunule; ends evenly rounded; subequal, passing smoothly into the arcuate base; sculpture of narrow, shiny low vertical concentric lamellae with much wider interspaces, which are more or less concentrically striated, especially toward the ends of the shell; the lamellae are more crowded toward the anterior end; pallial sinus rounded, high; not approaching the pallial line below; hinge normal, the chondrophore small. Length 1.5 mm, height 1.5 mm, diameter 1.5 mm.

Tampa siliex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 16522.

SEMELE SILICATA DALL.

PLATE 23, FIG. 7.

Semele silicata DALL, *Trans. Wagner Inst.*, vol. 3, pt. 5, p. 987, pl. 38, fig. 7, 1901.

Tampa siliex beds at Ballast Point, Tampa Bay, Florida. DALL, U. S. Nat. Mus. No. 16521.

The specimen figured is one of the first found. Better preserved individuals were subsequently obtained, and show a sharper sculpture.

Family CORBULIDAE.

Genus CORBULA (Bruguière) Lamarck.

Corbula BRUGUIÈRE, *Encycl. Méth.*, pl. 230, 1797 (not in Table 1792).—

LAMARCK, *Prodrome*, p. 89, 1799.—DALL, *Trans. Wagner Inst.*, vol.

3, pt. 4, p. 836, 1898. Type, *C. gallica* Lamarck. Not *Corbula* Bolten,

1798 (= *Asaphis* Moeder).

Bicorbula FISCHER, *Man. de Conchyl.*, p. 1125, 1887.

Section CUNEOCORBULA Cossmann.

Cuneocorbula COSSMANN, *Cat. Coq. Fos. bassin de Paris*, vol. 1, p. 37,

1886. Type, *C. triangulata* Deshayes.—DALL, *Trans. Wagner Inst.*,

vol. 3, pt. 4, p. 838, 1898.

CORBULA (CUNEOCORBULA) BURNSII Dall.

Plate 18, figs. 4, 5.

Corbula (Cuneocorbula) engonata var. *burnsii* DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 847, 1898.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay; of the lower bed at Alum Bluff, Chattahoochee River; and of the Chipola marl, near the county bridge over the Chipola River, Calhoun County, Florida. Burns and Dall. U. S. Nat. Mus. Nos. 166119, and 154509.

This differs from *C. engonata*, from which it is probably descended, in its large size and more prominently arcuate base. The former is from the Eocene and Vicksburgian.

CORBULA (CUNEOCORBULA) SARDA Dall.

Plate 17, fig. 2.

Corbula (Cuneocorbula) sarda DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 847, pl. 36, fig. 14, 1898.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay, and of the lower bed at Alum Bluff, Chattahoochee River, Calhoun County, Florida. U. S. Nat. Mus. No. 165223.

This species, though more delicate, recalls *Corbula alabamiensis* Lea, but is less twisted and pointed behind.

CORBULA (CUNEOCORBULA) KAGHRIANA, new species.

Plate 21, figs. 4, 5.

Shell small, inequivalve, plump, behind pointed and almost rostrate; left valve smaller; beaks small pointed, prosocoelous, not prominent; there is no lunule; a wide, strongly concentrically striate posterior dorsal area is bounded by a strong keel on each side; both valves are sculptured by strong concentric rounded ridges with wider interspaces; the ridges anteriorly sharp and appear even slightly recurved toward the beaks; behind they cease at the keels; the margin of the right valve below is tortuous and folded over the margin of the left valve behind; the dorsal margins between the keels pout prominently. Length 10, height 6.2, maximum diameter 5 mm.

Tampa silex beds at Ballast Point, Tampa Bay, Florida. U. S. Nat. Mus. No. 165224. Also recent.

A species identical with this was sent by the late Professor C. B. Adams from Jamaica, West Indies, to the Smithsonian Institution under the above name, which appears never to have been published.

Family SAXICAVIDAE.

Genus PANOPE Menard.

Panope MENARD, Mem. Nouveau Genre Coq. Biv., p. 31, Jan. 1807. Type,

P. aldrovandi Menard.—LAMARCK, Extr. d'un Cours, 1812, p. 108.

Panopea MENARD, Ann. du Mus. Paris, vol. 9, p. 131, May, 1807.

Panopea GOLDFUSS, Handb. d. Zool., p. 677, 1820.

Glycymeris LAMARCK, Prodrôme, p. 83, 1799. Type, *Mya glycymeris* Born,
Not *Glycymeris* Da Costa, 1778, nor of Lamarck, 1801, nor of Schu-
macher, 1817.

Panopaea LAMARCK, Anim. s. Vert., vol. 5, p. 456, 1818.—VALENCIENNES,
Arch. du Museum de Paris, vol. 1, p. 3, 1838.

Panopia SWAINSON, Malac., p. 367, 1840.

Glycymeris H. and A. ADAMS, Gen. Rec. Moll., vol. 2, p. 350, 1856.—GRAY,
Fig. Moll. Anim., vol. 5, p. 30, 1857.

Panope DALL, Proc. Mal. Soc., vol. 10, pt. 1, March, 1912, pp. 34-5.

I showed in 1912 that the first published and valid orthography of this name is *Panope* and not *Panopea* as usually printed, the latter form being printed at least three months later than the original separate issue of Menard's paper.

PANOPE WHITFIELDI Dall.

Plate 18, figs. 1, 2.

Panopea whitfieldi DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 829, 1898,
new name for:

Panopea goldfussi WHITFIELD, Miocene marls of N. J., p. 89, pl. 16, figs.
9-13, 1895; not of Wagner, 1838.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay; of the Chipola River marl, Calhoun County; and of the Oak Grove sands at Oak Grove, Santa Rosa County, Florida. Also mixed with Miocene species in the rehandled marl of Jericho, Cumberland County, New Jersey. U. S. Nat. Mus. No. 135913.

This species differs from the typical Miocene *Panope goldfussi* of Wagner in its smaller size, more equilateral valves, and less expanded anterior region.

Family GASTROCHAENIDAE.

Genus GASTROCHAENA (Spengler) Cuvier.

Gastrochaena (part) SPENGLER, Nova acta Soc. Sci. Hafn., vol. 2, p. 174,
1783.—DESHAYES, Traite de Conchyl., vol. 1, p. 26, 1844.

Gastrochaena CUVIER, Règne Anim., vol. 2, p. 490, 1817.—LAMARCK, Anim.
s. Vert., vol. 5, p. 446, 1818.

Rocellaria (Fleurbaey Ms.) BLAINVILLE, Dict. Sci. Nat., vol. 57, p. 244,
1828.—TRYON, Mon. Pholadacea, p. 39, 1862.

Rosellaria MENKE, Syn., p. 121, 1830.

Gastrochaena FISCHER, Man. de Conchyl., 1887, p. 1128.—DALL, Trans.
Wagner Inst., vol. 3, pt. 4, p. 823, 1898. Type, *G. dubia* DONOVAN
(=*G. modiolina* Lamarck).

GASTROCHAENA ROTUNDA Dall.

Plate 19, fig. 2.

Gastrochaena (ovata Sowerby var.) *rotunda* DALL, Trans. Wagner Inst., vol. 3, pt. 4, p. 825, 1898.

Oligocene of the Tampa silex beds at Ballast Point, Tampa Bay; of the Chipola marl of the Chipola River, near the county bridge, Calhoun County, Florida; and of the Bowden beds at Bowden, Jamaica, West Indies. U. S. Nat. Mus. No. 114705.

This form resembles *G. ovata* of the same size, but does not attain so large a size as the adult *ovata*, and has a more rounded posterior end with a rather shorter gape, the myophore being decidedly larger, wider, and more conspicuous. Lon. 7.0, lat. 3.5, diam. 2.8 mm.

FORAMINIFERA.

Genus ORBITOLITES Lamarck.

Orbitolites LAMARCK, Syst. An. s. Vert., 1801, p. 376. First species, *O. complanata* Lamarck.

Orbulites DESHAYES, ed. An. s. Vert., 1836, vol. 2, p. 302.

Nemophora CONRAD, Proc. Acad. Nat. Sci. Phila., vol. 17, 1865, p. 74. Same type, *Nummulites floridana* Conrad.

ORBITOLITES FLORIDANUS Conrad.

Plate 20, fig. 5; plate 21, figs. 7, 11.

?*Orbitolites complanata* LAMARCK, Syst. An. s. Vert., 1801, p. 376. Fossil of Grignon.

?*Orbitolites complanata*, various AUTHORS.

Nummulites (Assilina) floridanus CONRAD, Amer. Journ. Sci., new ser., vol. 2, 1846, p. 399, fig. 3.

Cristellaria ? floridana ORBIGNY, Prodr. Paleont., vol. 2, p. 406, 1300, 1857.

Nemophora floridana CONRAD, Proc. Acad. Nat. Sci., vol. 17, 1865, p. 74.

Abundant in the Tampa silex beds, and in the overlying limestone, and in silicified rock from Martin Station, Florida. U. S. Nat. Mus. No. 165225.

This species was identified by Doctor Baggs with *O. complanatus*. It seems, however, that the identification is doubtful. I therefore retain Conrad's name, about which there is no doubt, until the question is cleared up. It is remarkable for its variations as indicated in the figures given herewith.

CORALS.

The corals of this formation have been put in the hands of Dr. T. Wayland Vaughan for description. They comprise many species of great interest. See list on page 18.

EXPLANATION OF PLATES.

PLATE 1.

- FIG. 1. *Planorbis tampaensis* Dall, lat. 12.5 mm., p. 30.
 2. *Bulimulus tortilla* Dall, alt. 8 mm., p. 27.
 3. *Bulimulus tampa* Dall, alt. 13.7 mm., p. 26.
 4. *Urocoptis floridana* Dall, alt. 8 mm., p. 30.
 5. *Bulimulus ballistae* Dall, alt. 10.7 mm., p. 26.
 6. *Pupoides pilsbryi* Dall, alt. 4 mm., p. 29.
 7. *Amnicola adesta* Dall, alt. 3.2 mm., p. 102.
 8. *Planorbis elisus* Dall, basal view, diam. 4 mm., p. 31.
 9. The same specimen in profile.
 10. *Pisurella ceryx* Dall, profile, lon. 9.5 mm., p. 115.
 11. The same from above.
 12. *Pleurodonte haruspica* Dall, upper surface, lat. 26 mm., p. 23.
 13. The same in profile.
 14. The same, basal surface, lat. 26 mm.
 15. *Cerion anodonta* Dall, alt. 26.5 mm., p. 28.
 16. *Microcerion floridanum* Dall, alt. 4.75 mm., p. 29.
 17. The same in profile, showing the form of the reflected lip, lat. of shell 24 mm.
 18. *Bulimulus remolina* Dall, alt. 9.2 mm., p. 27.

PLATE 2.

- FIG. 1. *Bulimulus hellprinianus* Dall, alt. 11 mm., p. 25.
 2. *Bulimulus floridanus* Conrad, alt. 10 mm., p. 25.
 3. *Urocoptis floridana* Dall, alt. 11.5 mm., p. 30.
 4. *Bulimulus stearnsi* Dall, alt. 13 mm., p. 27.
 5. *Bulimulus americanus* Hellprin, alt. 17 mm., p. 26.
 6. *Cepolis instrumosa* Dall, lat. 13.5 mm., p. 23.
 7. *Polygyra adamns* Dall, upper surface, lat. 9.1 mm., p. 24.
 8. *Cepolis crusta* Dall, lat. 15 mm., p. 24.
 9. *Polygyra adamns* Dall, front view, p. 24.
 10. Body whorl of *Bulimulus hellprinianus* enlarged to show form of sub-sutural sinus and lip, p. 25.
 11. *Pleurodonte haruspica* Dall, lat. 24 mm., p. 23.
 12. *Cepolis direpta* Dall, front view, lat. 15 mm., p. 23.
 13. *Cepolis latebrosa* Dall, profile of imperfect specimen, p. 22.
 14. *Cepolis direpta* Dall, basal view, lat. 15 mm., p. 23.
 15. *Cepolis instrumosa* Dall, base, lat. 13.5 mm., p. 23.
 16. *Cepolis crusta* Dall, base, lat. 15 mm., p. 24.
 17. *Cepolis latebrosa* Dall, upper surface, lat. 16 mm., p. 22.
 18. *Pleurodonte diespiter* Dall, base, lat. 18 mm., p. 24.
 19. *Cepolis latebrosa* Dall, base, lat. 16 mm., p. 22.
 20. *Pleurodonte diespiter* Dall, upper surface, lat. 18 mm., p. 24.

PLATE 3.

- FIG. 1. *Cypraea tumulus* Hellprin, profile, lon. 34 mm., p. 84.
 2. *Cypraea heilprini* Dall, profile, lon. 26.5 mm., p. 85.
 3. *Bulinulus americanus* Hellprin, basal view, p. 26. (See also pl. 2, fig. 5.)
 4. *Cerion anodonta* Dall, var. *floridana* Dall, alt. 22 mm., p. 28.
 5. *Planorbis wilcosii* Dall, profile, lat. 6.5 mm., p. 31.
 6. The upper surface of the same, lat. 6.5 mm.
 7. *Cancellaria subthomasi* Dall, alt. 20 mm., p. 47.
 8. *Ischnochiton tampaensis* Dall, a, upper surface of middle valve; b, under surface of the same, lat. 6.5 mm., p. 115.
 9. *Drillia newmani* Dall, profile of body whorl showing anal sinus; enlarged, p. 46.
 10. *Ampullina solidula* Dall, alt. 16 mm., p. 108.
 11. *Margarites tampaensis* Dall, lat. 8 mm., p. 112.
 12. *Cypraea tumulus* Hellprin, base, lon. 34 mm., p. 84.
 13. *Melanella conoidea* Kurtz and Stimpson, alt. 13 mm., p. 82.
 14. *Cypraea heilprinii* Dall, base, lon. 26.5 mm., p. 85.

PLATE 4.

- FIG. 1. *Calliostoma tampicum* Dall, alt. 10.5 mm., p. 111.
 2. *Astyris dicaria* Dall, alt. 4.3 mm., p. 72.
 3. *Arca (Barbatia) marylandica* Conrad, lon. 37 mm., p. 119.
 4. *Astyris acanthodes* Dall, alt. 6 mm., p. 73.
 5. *Yoldia frater* Dall, lon. 13.5 mm., p. 117.
 6. *Cardium (Trachycardium) parile* Dall, alt. 15 mm., p. 143.
 7. *Drillia belothea* Dall, alt. 9 mm., p. 42.
 8. *Pleurodonte cunctator* Dall, lat. 11 mm., p. 24.
 9. *Pleurodonte cunctator* Dall.
 10. *Acteon tampae* Dall, alt. 7 mm., p. 32.
 11. *Tellina (Angulus) atossa* Dall, lon. 21 mm., p. 153.
 12. *Bulinulus (Hyperaulax) partulinus* Dall, alt. 13.5 mm., p. 26.
 13. *Cardium (Trachycardium) cestum* Dall, alt. 32 mm., p. 142.
 14. *Bulinulus (Hyperaulax) laevis* Dall, alt. 15.5 mm., p. 26.

PLATE 5.

- FIG. 1. *Turritella tripartita* Dall, alt. 43 mm., p. 97.
 2. *Terebra (Oxymoris) dislocata* Say, var. alt. 25 mm., p. 36.
 3. *Drillia eupora* Dall, alt. 16 mm., p. 42.
 4. *Drillia severina* Dall, alt. 23 mm., p. 40.
 5. *Cerithium precursor* Hellprin, alt. 12 mm., p. 90. (See also pl. 12, fig. 26.)
 6. *Fusinus ? quinquespinus* Dall, alt. 33 mm., p. 66.
 7. *Helicina posti* Dall, lat. 11.5 mm., p. 113.
 8. *Sinum imperforatum* Dall, alt. 13.2 mm., p. 109.
 9. *Assiminea aldra* Dall, alt. 2 mm., p. 101.
 10. *Murex mississippiensis* Conrad, alt. 32 mm., p. 73.
 11. *Ammauopsis guppyi* Gabb var. *floridana* Dall, alt. 27 mm., p. 108.
 12. *Drillia glyphostoma* Dall, alt. 15 mm., p. 45.
 13. *Turris albida* Perry, alt. 75 mm., p. 38. (See also pl. 14, fig. 7.)
 14. *Murex crispangula* Hellprin, alt. 42 mm., p. 75.
 15. *Tritonalia scabrosa* Dall, alt. 22 mm., p. 77.
 16. *Turris (Sarcula) serrata* Conrad, alt. 55 mm., p. 39.

PLATE 6.

- FIG. 1. *Conus planiceps* Hellprin, alt. 41 mm., p. 37.
 2. The same, upper surface.
 3. *Conus illiolus* Dall, alt. 43 mm., p. 37.
 4. *Conus designatus* Dall, alt. 23 mm., p. 37.
 5. *Conus illiolus* Dall, from above, p. 37.
 6. *Coralliothila magna* Dall, alt. 52.5 mm., p. 78. (See also pl. 7, fig. 7.)
 7. *Fasciolaria petrosa* Dall, alt. 100 mm., p. 64.
 8. *Acteocina squarrosa* Dall, alt. 11.5 mm., p. 33.
 9. *Cypræa ballista* Dall, lon. 33.5 mm., p. 85.
 10. The same in profile.
 11. The same, basal view.

PLATE 7.

- FIG. 1. *Ancilla shepardii* Dall, alt. 3475 mm., p. 51.
 2. *Vasum subcapitellum* Hellprin, alt. 27 mm., p. 63.
 3. *Drillia newmani* Dall, alt. 12.5 mm., p. 46. (See also pl. 3, fig. 9.)
 4. *Muricidea hellprini* Cossmann, alt. 23 mm., p. 76.
 5. *Cantharus pauper* Dall, alt. 11 mm., p. 69. (See also pl. 10, fig. 12.)
 6. *Merginella tampae* Dall, alt. 19 mm., p. 54.
 7. *Coralliothila magna* Dall, alt. 45 mm., p. 78. (See also pl. 10, fig. 6.)
 8. *Latirus callimorphus* Dall, alt. 41 mm., p. 65.
 9. *Purpura* (*Pteropurpura*) *posti* Dall, alt. 40 mm., p. 76.

PLATE 8.

- FIG. 1. *Pyrazisinus cornutus* Hellprin, from type showing secondary lip (a) formed after injury; (b) original lip. Alt. 45 mm., p. 92.
 2. *Latirus rugatus* Dall, alt. 42 mm., p. 65.
 3. *Bittium priscum* Dall, alt. 7 mm., p. 88.
 4. *Drillia lapenotieri* Dall, alt. of fragment 27.5 mm., p. 40.
 5. *Polamides hillsboroensis* Hellprin, alt. 37.5 mm., p. 91.
 6. *Latirus floridanus* Hellprin, alt. 38 mm., p. 64.
 7. *Melongena sculpturata* var. *turricula* Dall, alt. 60 mm., p. 68.
 8. *Fusinus neatis* Dall, alt. 12 mm., p. 66.

PLATE 9.

- FIG. 1. *Lyria musicina* Hellprin, alt. 40 mm., p. 59.
 2. *Strigatella americana* Dall, alt. 27 mm., p. 61.
 3. *Cerithium plectrum* Dall, alt. 4.6 mm., p. 90.
 4. *Lyria musicina* Hellprin, alt. 40 mm., p. 59.
 5. *Busycón spiniger* var. *nodulatum* Conrad, alt. 37 mm., p. 67.
 6. *Turritella systoliata* Dall, alt. 73 mm., p. 99.
 7. *Murex trophoniformis* Hellprin, alt. 49 mm., p. 74.
 8. *Strombus chipolanus* Dall, alt. 65 mm., p. 87.
 9. *Polinices hemicryptus* Gabb, alt. 8.2 mm., p. 106.
 10. *Strombus chipolanus* Dall, alt. 65 mm., p. 87.

PLATE 10.

- FIG. 1. *Conciliaria subthomasiæ* Dall, alt. 20 mm., p. 47. (See also pl. 3, fig. 7.)
 2. *Conomitra staminea* Conrad, alt. 24 mm., p. 62.

- FIG. 3. *Lyria silicata* Dall, alt. 27.2 mm., p. 59.
 4. *Cancellaria depressa* Dall, alt. 17.5 mm., p. 48.
 5. *Busycon spiniger* var. *tampaensis* Dall, alt. 41 mm., p. 67.
 6. *Coralliophila magna* Dall, alt. 52.5 mm., p. 78. (See also pl. 7, fig. 7.)
 7. *Busycon stellatum* Dall, young, alt. 35 mm., p. 67.
 8. *Marginella intensa* Dall, alt. 8 mm., p. 56.
 9. *Busycon stellatum* Dall, upper surface, lat. 20.5 mm., p. 67.
 10. *Olivella eutorta* Dall, alt. 12 mm., p. 50.
 11. *Lyria pulchella* Sowerby, alt. 27.5 mm., p. 58.
 12. *Cantharus pauper* Dall, alt. 11 mm., p. 69. (See also pl. 7, fig. 5.)
 13. *Lyria heilprini* Dall, alt. 43.5 mm., p. 58.

PLATE 11.

- FIG. 1. *Melongena sculpturata* Dall, alt. 60 mm., p. 68.
 2. *Vasum engonatum* Dall, alt. 96 mm., p. 63.
 3. *Vasum engonatum*, from above.
 4. *Orthaulax inornatus* Gabb, fragment of adult, alt. 55 mm., p. 86.
 5. *Ampullina* (*Ampullinopsis*) *amphora* Heilprin, alt. 55 mm., p. 108.
 6. *Marginella tampae* Dall, alt. 19 mm., p. 54.
 7. *Marginella limatula* Conrad, alt. 15 mm., p. 54.

PLATE 12.

- FIG. 1. *Marginella mollitor* Dall, alt. 11.5 mm., p. 52.
 2. *Marginella myrina* Dall, alt. 6 mm., p. 57.
 3. *Marginella infecta* Dall, alt. 7.7 mm., p. 50.
 4. *Marginella impagina* Dall, alt. 5 mm., p. 56.
 5. *Lacuna precursor* Dall, alt. 5.75 mm., p. 94.
 6. *Marginella posti* Dall, alt. 6.4 mm., p. 56.
 7. *Mitra myra* Dall, alt. 8 mm., p. 61.
 8. *Drillia spica* Dall, alt. 13 mm., p. 42.
 9. *Olivella collecta* Dall, alt. 4.5 mm., p. 50.
 10. *Drillia sella* Dall, alt. 11.4 mm., p. 41.
 11. *Anachis eutheria* Dall, alt. 9 mm., p. 71.
 12. *Astyris eluthera* Dall, alt. 8 mm., p. 72.
 13. *Alectrion ursula* Dall, alt. 7.5 mm., p. 69.
 14. *Eulima boisdichi* Dall, alt. 9 mm., p. 82.
 15. *Mangilia illota* Dall, alt. 8 mm., p. 46.
 16. *Drillia eupatoria* Dall (immature), alt. 7 mm., p. 44.
 17. *Mitra syra* Dall, alt. 15.5 mm., p. 60.
 18. *Drillia tecta* Dall, alt. 10 mm., p. 43.
 19. *Cerithiopsis silicata* Dall, alt. 7 mm., p. 93.
 20. *Turbonilla* (*Ptycheulimella*) *ethellina* Dall, alt. 3.5 mm., p. 84.
 21. *Drillia emilia* Dall, alt. 12.5 mm., p. 43.
 22. *Drillia silfa* Dall (immature), alt. 7 mm., p. 46.
 23. *Drillia tama* Dall, alt. 10 mm., p. 45.
 24. *Oliwa posti* Dall, alt. 21.5 mm., p. 49.
 25. *Drillia condominia* Dall, alt. 25 mm., p. 39.
 26. *Cerithium praecursor* Heilprin, alt. 12 mm., p. 90.
 27. *Ampullina streptostoma* Heilprin, alt. 29.5 mm., p. 107.
 28. *Morum domingense* Sowerby, alt. 26 mm., p. 85.
 29. *Sinum chipolanum* Dall, alt. 14 mm., p. 109. (See also pl. 16, fig. 1.)

PLATE 13.

- FIG. 1. *Rissina supralaevigata*, alt. 5.5 mm., p. 101.
 2. *Turritella litharia* Dall, alt. 20 mm., p. 99.
 3. *Turritella* (*tampae* var. ?) *medioconstricta* Dall, alt. 48 mm., p. 98.
 4. *Pyramidella crenulata* Holmes, alt. 12 mm., p. 83.
 5. *Turritella atacta* Dall (var. ?), alt. 14 mm., p. 100.
 6. *Strombus liocyclus* Dall, alt. 36.5 mm., p. 88.
 7. The same, dorsal view.
 8. *Rapana tampacensis* Dall, alt. 35 mm., p. 78.
 9. *Typhis siphonifera* Dall, alt. 10.5 mm., p. 77.
 10. *Rapana biconica* Dall, alt. 41.5 mm., p. 79.
 11. *Murex sezangula* Dall, alt. 22 mm., p. 74.
 12. *Hipponix pygmaeus* Lea, alt. 5 mm., p. 104.
 13. The same in profile.
 14. The same, basal view.
 15. *Pyrazisinus campanulatus* Hellprin, a somewhat immature specimen, alt. 40.7 mm., the peristome incomplete, p. 92.
 16. *Bittium adela* Dall, immature, alt. 8.5 mm., p. 89.
 17. *Alectrion ethelinda* Dall, alt. 11.2 mm., p. 70.
 18. *Pyrazisinus campanulatus* Hellprin, adult, with completed peristome, alt. 47 mm., p. 92.

PLATE 14.

- FIG. 1. *Turritella tampae* Hellprin, alt. 13.5 mm., p. 97.
 2. *Mitra silicata* Dall, alt. 29 mm., p. 60.
 3. *Potamides transecta* Dall, alt. 18 mm., p. 91.
 4. *Serpulorbis ballistae* Dall, lon. of coral 70 mm., p. 95.
 5. *Turritella atacta* Dall, alt. 28 mm., p. 100.
 6. *Turritella megalobasis* Dall, alt. 65 mm., p. 98.
 7. *Turris albida* Perry, alt. 75 mm., p. 38. (See also pl. 5, fig. 13.)
 8. *Turritella pagodaeformis* Hellprin, alt. 50 mm., p. 98.

PLATE 15.

- FIG. 1. *Xenophora conchyliophora* Born, lat. 39 mm., p. 105.
 2. The same, basal view.
 3. *Marginella inepta* Dall, alt. 5.5 mm., p. 53.
 4. *Uvella lata* Dall, alt. 9.25 mm., p. 49.
 5. *Orthaulax pugnax* Hellprin, the outer lip restored; alt. 80 mm., p. 87.
 6. *Astypis turgidula* Dall, alt. 13 mm. This specimen is not quite mature, p. 72.
 7. *Modulus turbinatus* Hellprin, alt. 21 mm., p. 94.
 8. *Calliostoma metrium* Dall, alt. 18 mm., p. 111.
 9. *Helicina ballista* Dall, alt. 8 mm., p. 113.
 10. *Orthaulax pugnax* Hellprin, viewed from above, p. 87.
 11. *Helicina ballista* Dall, basal view, lat. 10 mm., p. 113.

PLATE 16.

- FIG. 1. *Sium chipolanum* Dall, alt. 14 mm., p. 109. (See also pl. 12, fig. 29.)
 2. *Serita tampacensis* Dall, alt. 10 mm., p. 114.
 3. *Natica* (*Cryptonatica*) *floridana* Dall, alt. 7.5 mm., p. 106.

- FIG. 4. *Liotia (Arcne) solariella* Hellprin, view of upper surface, lat. 5.8 mm., p. 112.
5. The same in profile.
6. *Liotia coronata* Dall, upper surface, lat. 5 mm., p. 112.
7. *Hipponix willcoxii* Dall, lon. of base, 9 mm., p. 104.
8. *Vivipara (Lioplax) floridana* Dall, alt. 7.5 mm., p. 100.
9. *Marginella bellula* Dall, alt. 6.5 mm., p. 53.
10. *Marginella bella* Conrad, alt. 8 mm., p. 55.
11. *Marginella elegantula* Dall, alt. 11 mm., p. 53.
12. *Marginella ballista* Dall, alt. 18 mm., p. 54.
13. *Marginella newmani* Dall, alt. 5.5 mm., p. 57.
14. *Marginella faunula* Dall, alt. 8 mm., p. 53.
15. *Tegula exoleta* Conrad, lat. 12 mm., p. 111.
16. The same, basal view.
17. *Liotia coronata* Dall, lat. 5 mm., p. 112.

PLATE 17.

- FIG. 1. *Cardita (Carditamera) tegea* Dall, lon. 33 mm., p. 133.
2. *Corbula sarda* Dall, lon. 12 mm., p. 155.
3. *Tellina segregata* Dall, lon. 17 mm., p. 151.
4. *Arca (Barbatia) irregularis* Dall, lon. 52 mm., p. 119.
5. *Arca (Barbatia) arcuata* Hellprin, lon. 47 mm., p. 120.
6. *Arca umbonata* Lamarck, left valve from above, lon. 36 mm., p. 118.
7. *Arca (Scapharca) hypomela* Dall, lon. 50 mm., p. 121.
8. *Arca umbonata* Lamarck, interior of left valve, lon. 50 mm., p. 118.
9. *Villorita floridana* Dall, view of hinge of right valve, alt. 70 mm., p. 134.
10. The same, profile view, diam. 25 mm.
11. *Tellina segregata* Dall, from above, lon. 17 mm., p. 151.

PLATE 18.

- FIG. 1. *Panope whitfieldi* Dall, lon. 88 mm., p. 156.
2. *Panope whitfieldi* Dall.
3. *Callocardia nux* Dall, lon. 14 mm., p. 147.
4. *Corbula burnsi* Dall, lon. 11 mm., p. 155.
5. *Corbula burnsi* Dall.
6. *Bornia tampae* Dall, lon. 6 mm., p. 141.
7. *Cardium (Trachycardium) propecliare* Dall, lon. 20 mm., p. 142.
8. *Villorita floridana* Dall, alt. 70 mm., p. 134.
9. *Diplodonta catopotium* Dall, lon. 8 mm., p. 140.
10. *Villorita floridana* Dall, alt. 70 mm., p. 134.
11. *Villorita floridana*, showing the hinge of the right valve, lat. 65 mm.

PLATE 19.

- FIG. 1. *Spondylus chipolanus* Dall, young valve, alt. 36 mm., p. 125.
2. *Gastrochaena rotunda* Dall, lon. 7 mm., p. 157.
3. *Cardium (Cerastoderma) taphrium* Dall, lon. 35 mm., p. 144.
4. *Spondylus bostrychites* Guppy, alt. 59 mm., p. 124.
5. *Phacoides hillshoroensis* Hellprin, alt. 60 mm., p. 139.
6. *Ostrea vauhani* Dall, lon. 120 mm., p. 123.

PLATE 20.

- FIG. 1. *Arca grammatodonta* Dall, interior of right valve, lon. 30 mm., p. 118.
(See pl. 22, fig. 3.)
2. The same, from above.
3. *Modiolus blandus* Dall, anterior view, lat. 20 mm., p. 127. (See fig. 6.)
4. *Semele sardonica* Dall, profile from in front, p. 154. (See fig. 7.)
5. *Orbitolites floridanus* Conrad, typical spiral form, p. 157. (See pl. 21, figs. 7, 11), diam. 12 mm.)
6. *Modiolus blandus* Dall, right side, the left valve overlapping a little below, lon. 43.5 mm., p. 127.
7. *Semele sardonica* Dall, right valve lon. 16 mm., p. 154.
8. *Macrocallista (Paradione) acuminata* Dall, interior of right valve, lon. 16 mm., p. 146.
9. The same, from in front.
10. The same, exterior of right valve, lon. 16.5 mm. (See also pl. 24, fig. 2.)
11. *Glycymeris lamyi* Dall, alt. 16.5 mm., p. 122.
13. The same, interior of the valve.
12. *Modiolus blandus* Dall, view from above; note the overlapping of the left valve; lon. 43.5 mm., p. 127.

PLATE 21.

- FIG. 1. *Phacoides tampaensis* Dall, lon. 5 mm., p. 138.
2. The same, from in front.
3. *Erycina ? indecisa* Dall, lon. 4 mm., p. 141. (See fig. 8.)
4. *Corbula kaghriana* Dall, anterior view, p. 155.
5. The same, in profile, lon. 10 mm.
6. *Leda posti* Dall, lon. 14 mm., p. 117. (See fig. 9.)
7. *Orbitolites floridanus* Conrad, orbicular (? sexual) form, diam. 6 mm., p. 157.
8. *Erycina ? indecisa* Dall, viewed from in front, p. 141. (See fig. 3.)
9. *Leda posti* Dall, interior of right valve, lon. 9.5 mm., p. 117.
10. *Cardita shepardii* Dall, interior of left valve, lon. 9.5 mm., p. 133.
11. *Orbitolites floridanus* Conrad, spiral form, p. 157. (See also pl. 20, fig. 5, for opposite side), diam. 12 mm.
12. *Cardita shepardii* Dall, exterior of left valve, lon. 9.5 mm., p. 133.
13. *Nucula tampae* Dall, from in front, p. 116.
14. The same, in profile, lon. 7.3 mm.
15. *Codakia (Jagonia) scurra* Dall, lon. 11 mm., p. 136.
16. The same, from above.
17. *Arca (Scapharca) hypomela* Dall, interior of right valve, lon. 31 mm., p. 121.
18. The same, exterior view.

PLATE 22.

- FIG. 1. *Tellina chipolana* Dall, left valve, lon. 20 mm., p. 151.
2. The same, interior view.
3. *Arca grammatodonta* Dall, exterior of right valve, lon. 35 mm., p. 118.
(See also pl. 20, figs. 1, 2.)
4. *Cyrena pompholyx* Dall, right valve, lon. 50 mm., p. 134.
5. The same, from above.

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The following is a list of the names of the members of the American Medical Association who have been elected to the office of President of the Association for the year 1911. The names are listed in alphabetical order of their last names. The names of the members who have been elected to the office of President of the Association for the year 1911 are listed in alphabetical order of their last names. The names of the members who have been elected to the office of President of the Association for the year 1911 are listed in alphabetical order of their last names.

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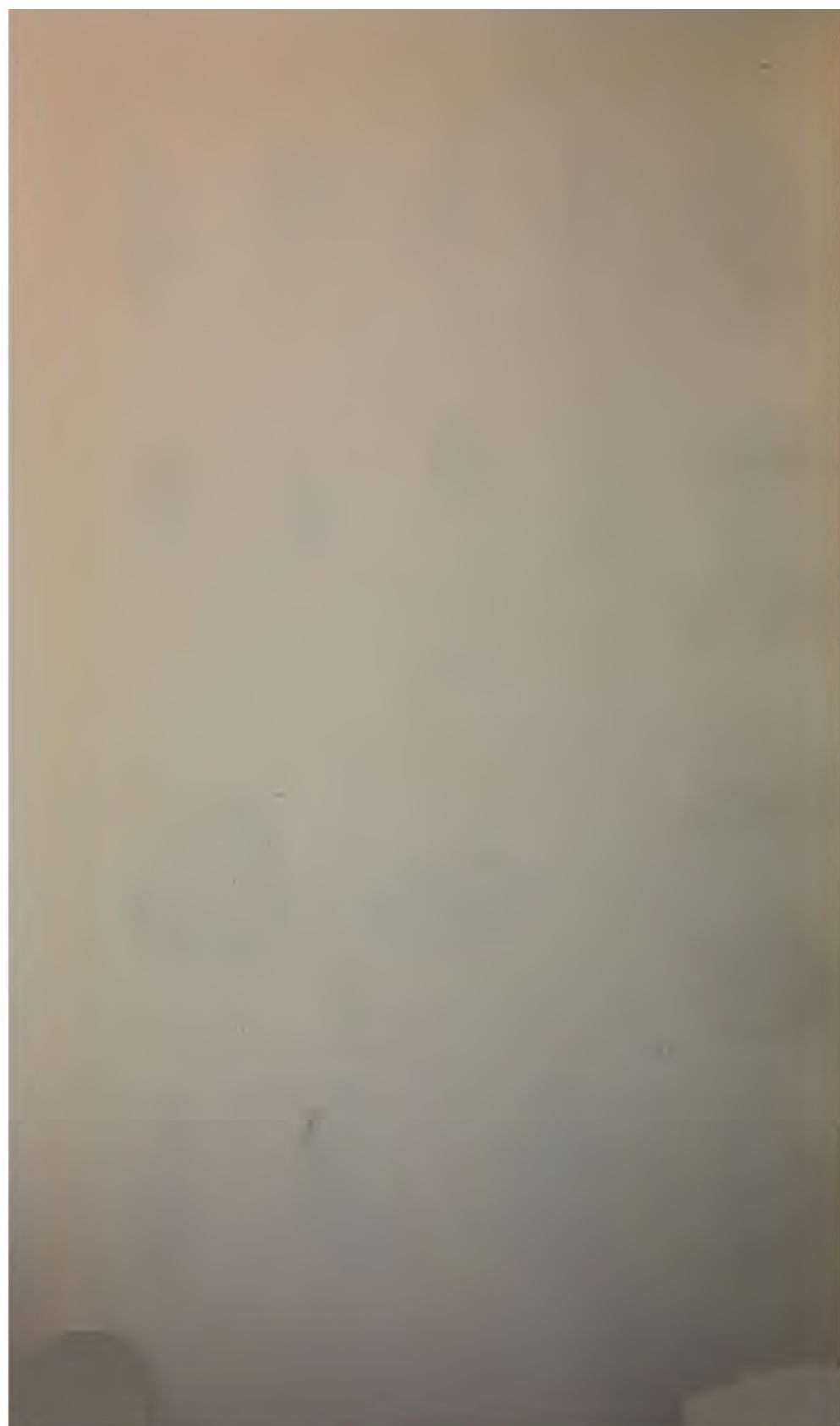
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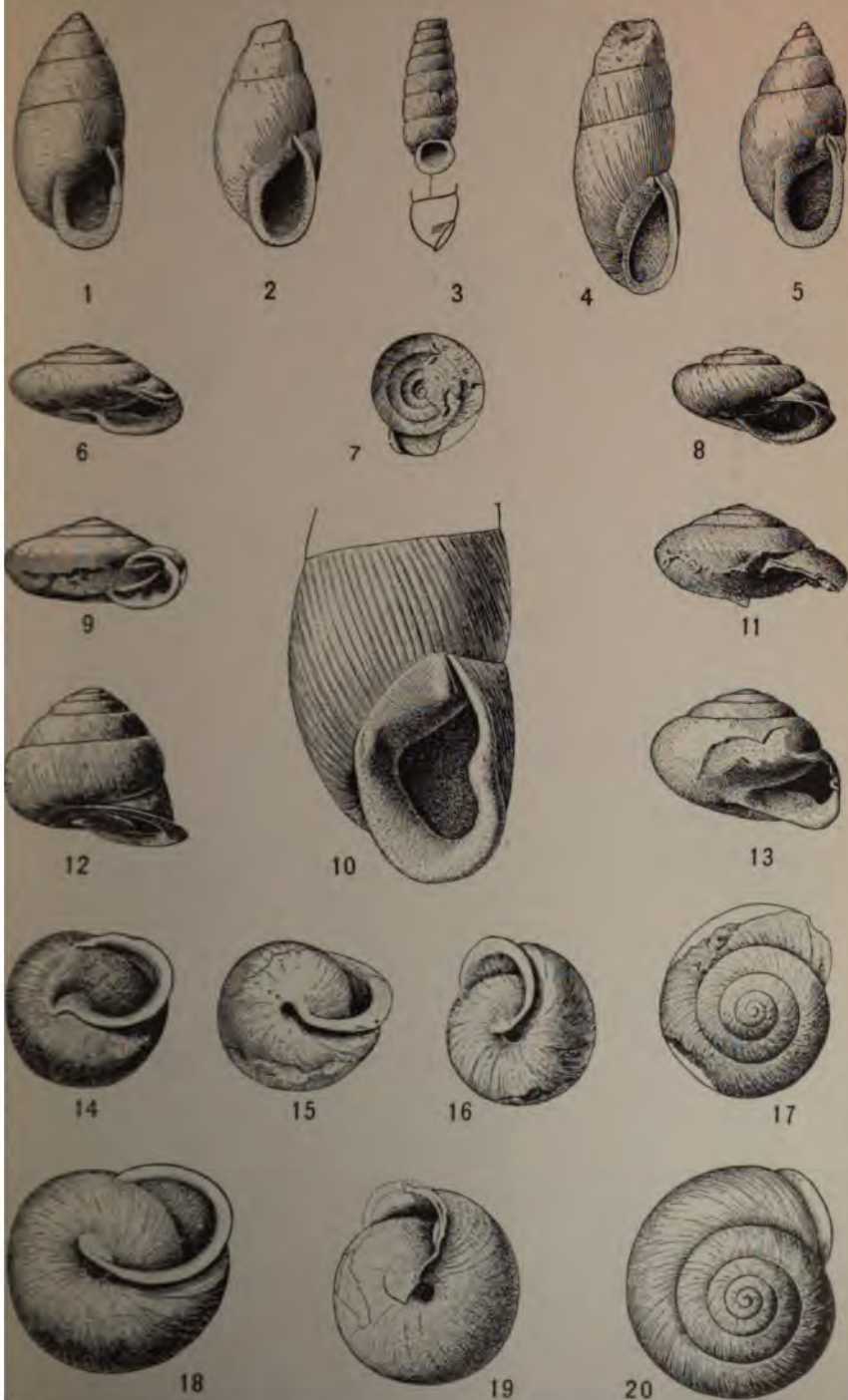
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PLATE 26.

- FIG. 1. *Antigona tarquinia* Dall, left valve, lon. 49 mm., p. 147.
2. The same, from above.
3. *Venus halidona* Dall, right valve, lon. 37 mm., p. 150.
4. *Modiolus* (*Brachydontes*) *grammatus* Dall, left valve, lon. 20 mm.,
p. 127.
5. *Venus halidona* Dall, right valve, from above, lon. 37 mm., p. 150.
6. *Venericardia serricosta* Hellprin, interior of left valve, lon. 32 mm.,
p. 132.
7. *Lithophaga nuda* Dall, from above specimen defective behind, lon. 56
mm., p. 129. (See also pl. 24, fig. 4.)

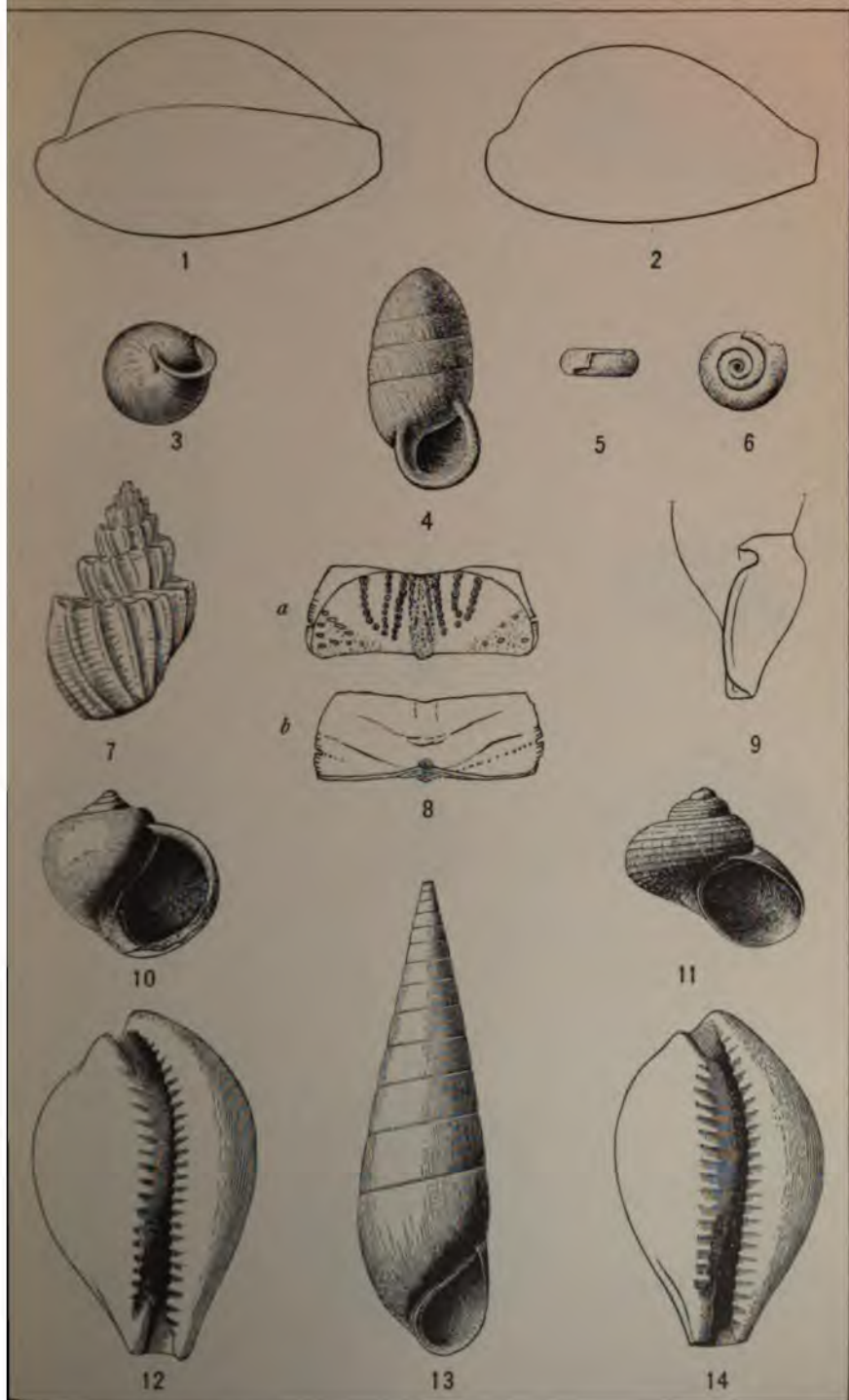




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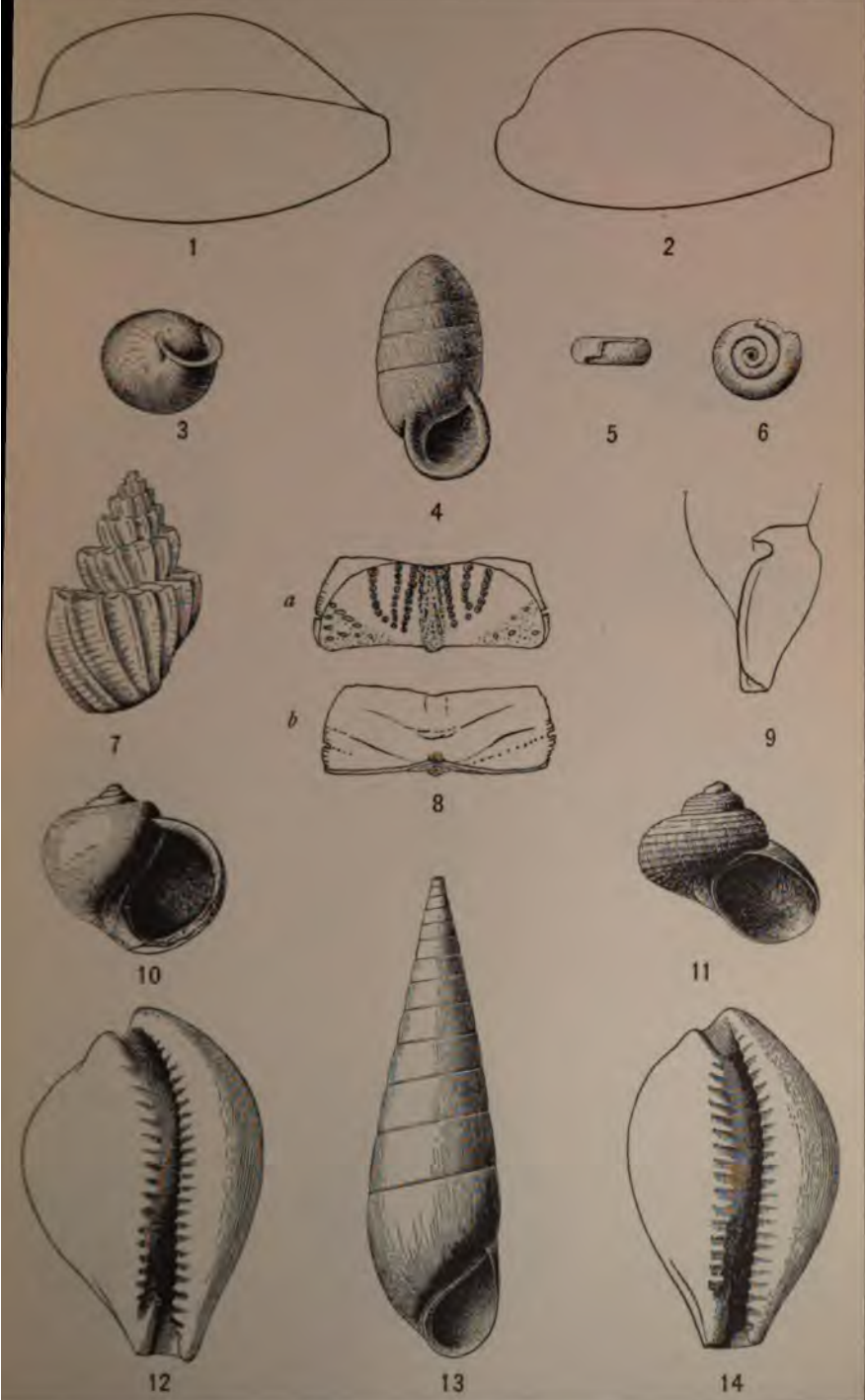
FOR EXPLANATION OF PLATE SEE PAGE 159.





FOSSILS OF THE ORTHAULAX PUGNAX ZONE.

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FOR EXPLANATION OF PLATE SEE PAGE 160.

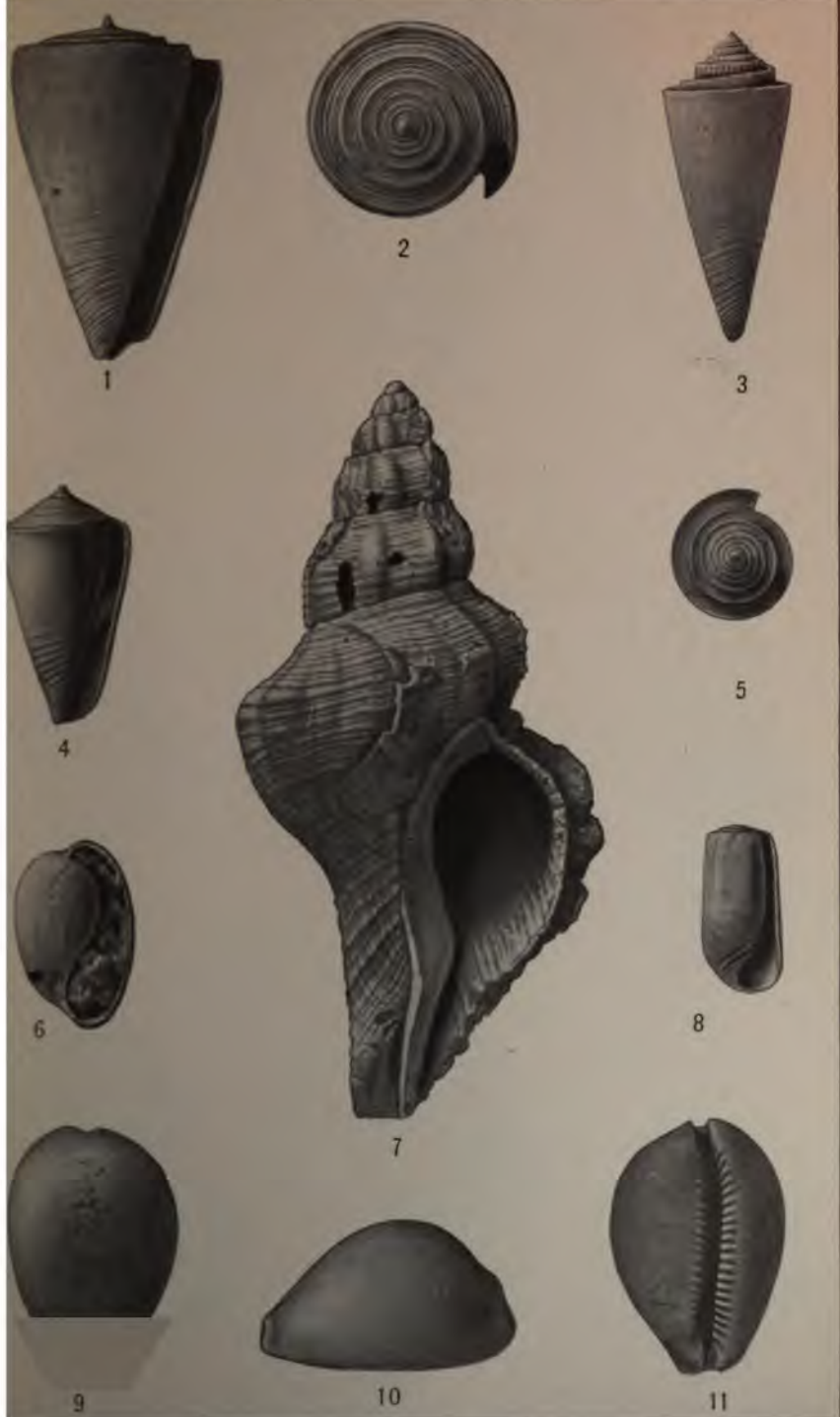




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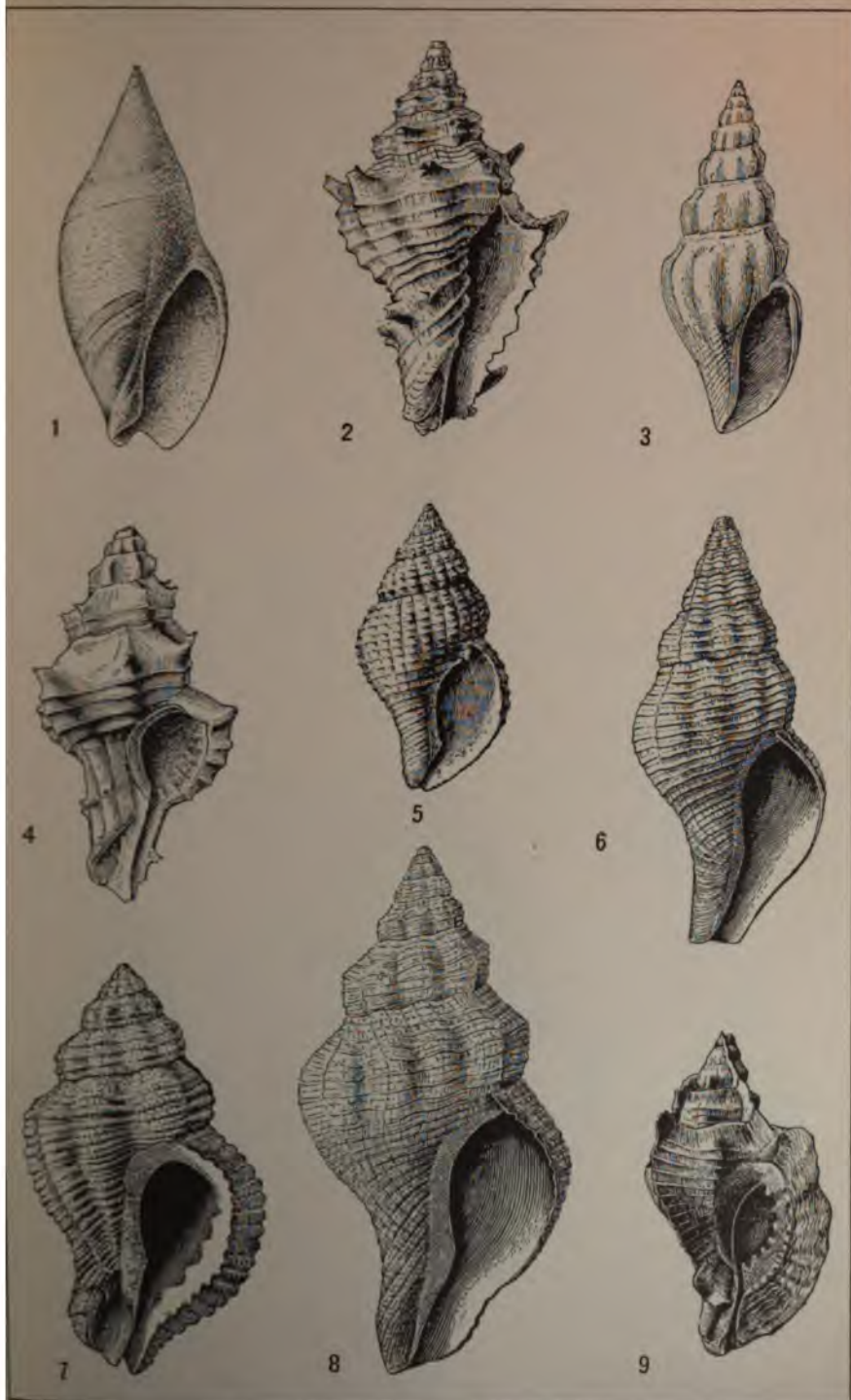




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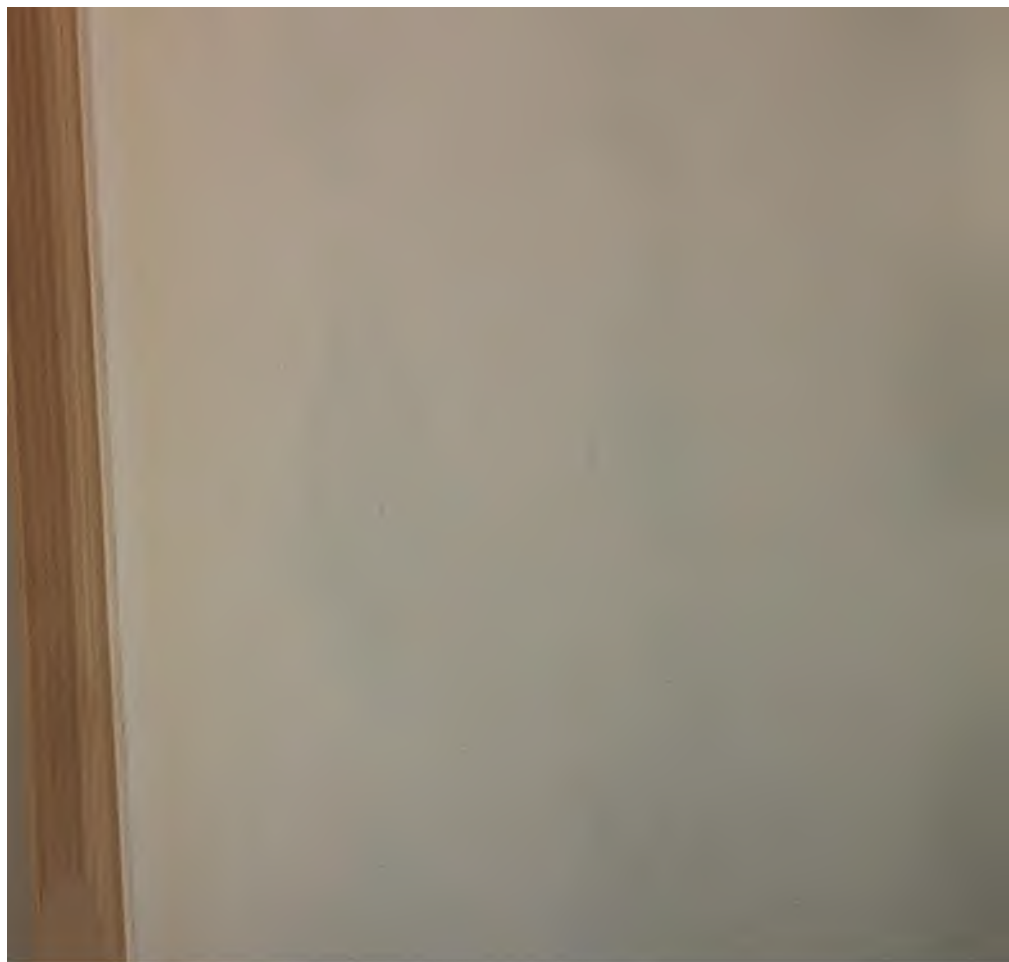
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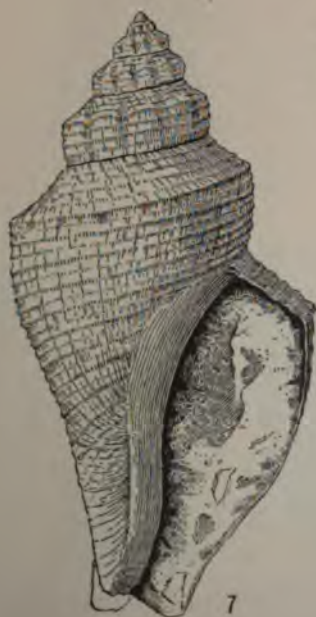




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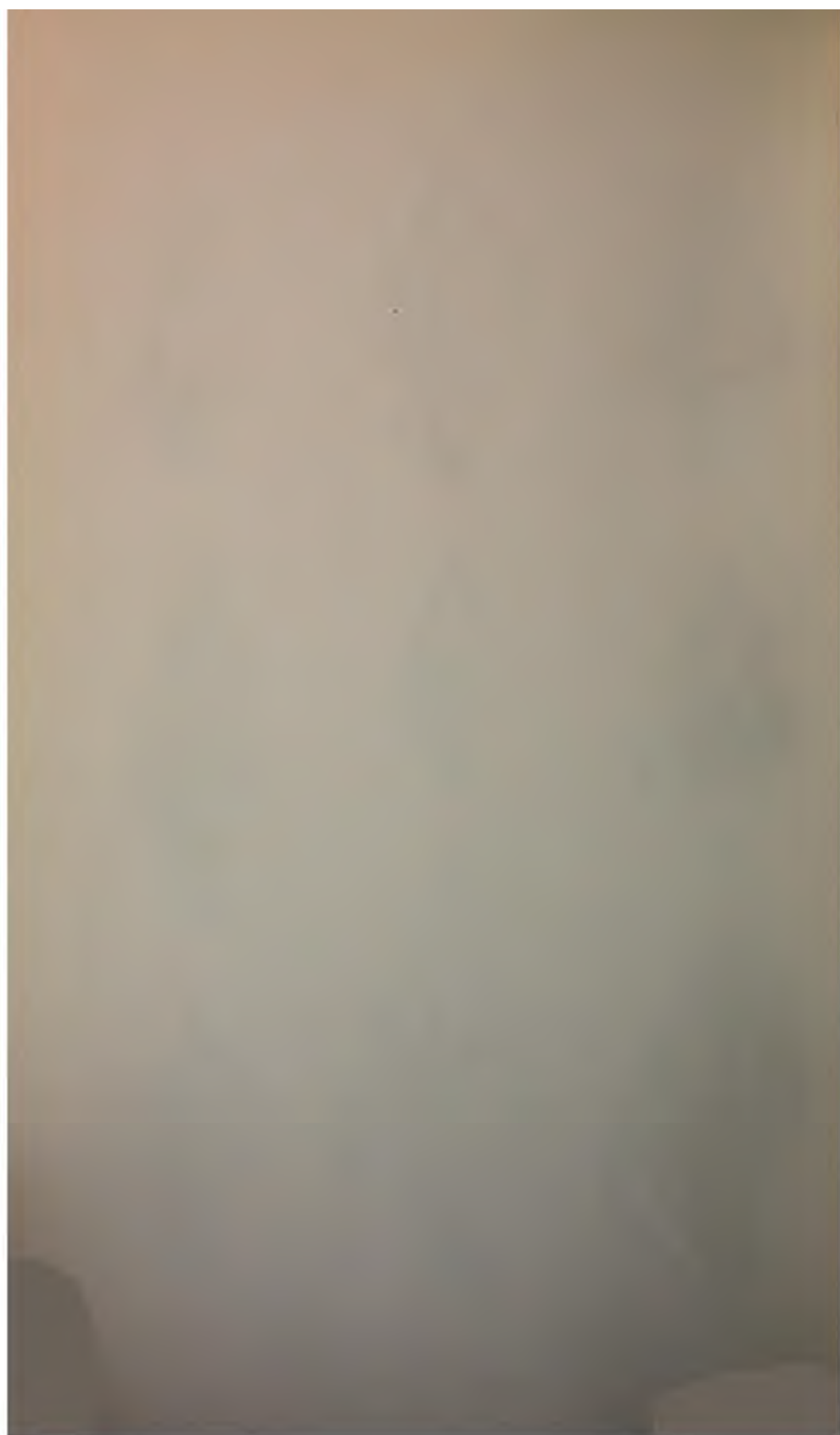
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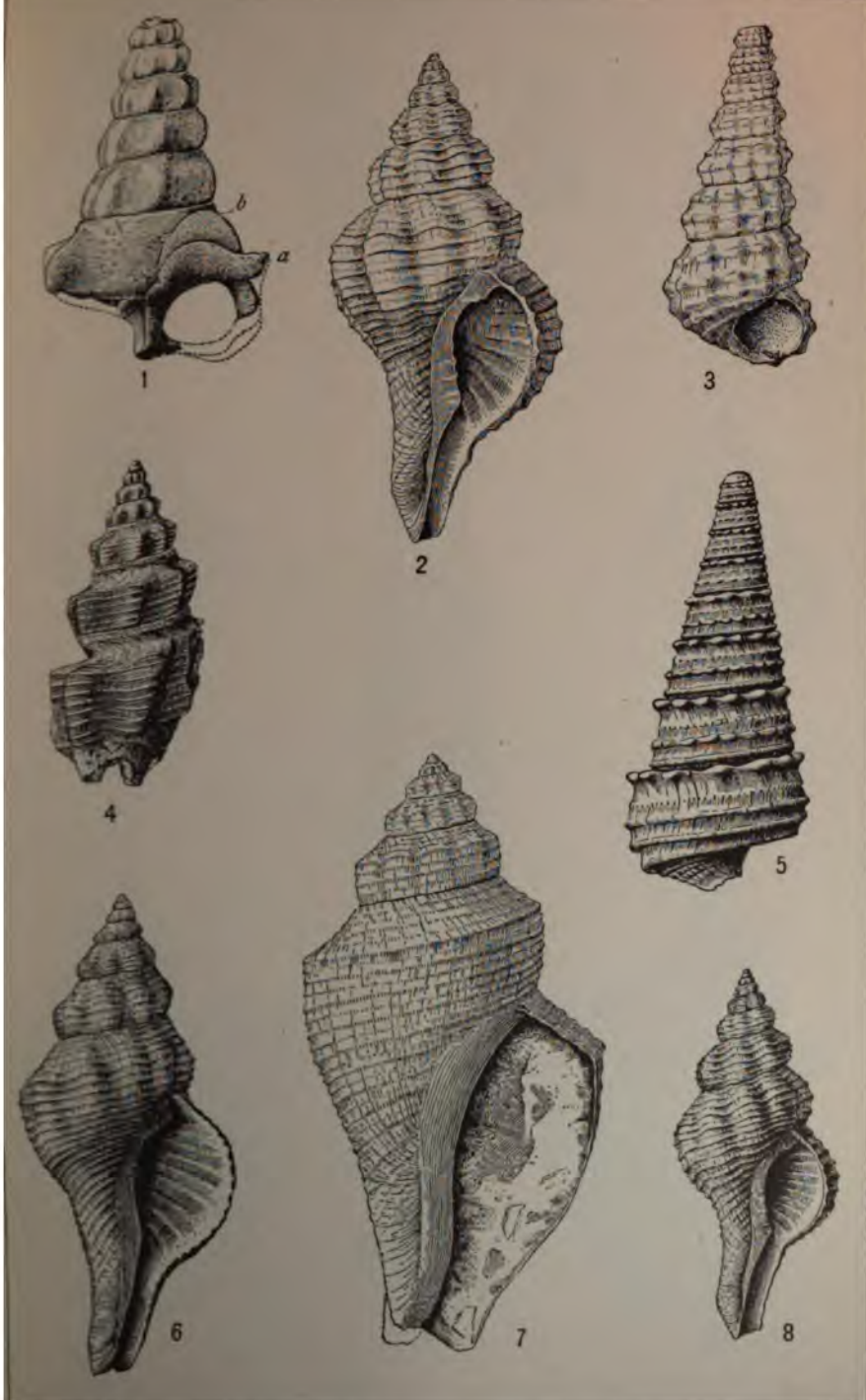




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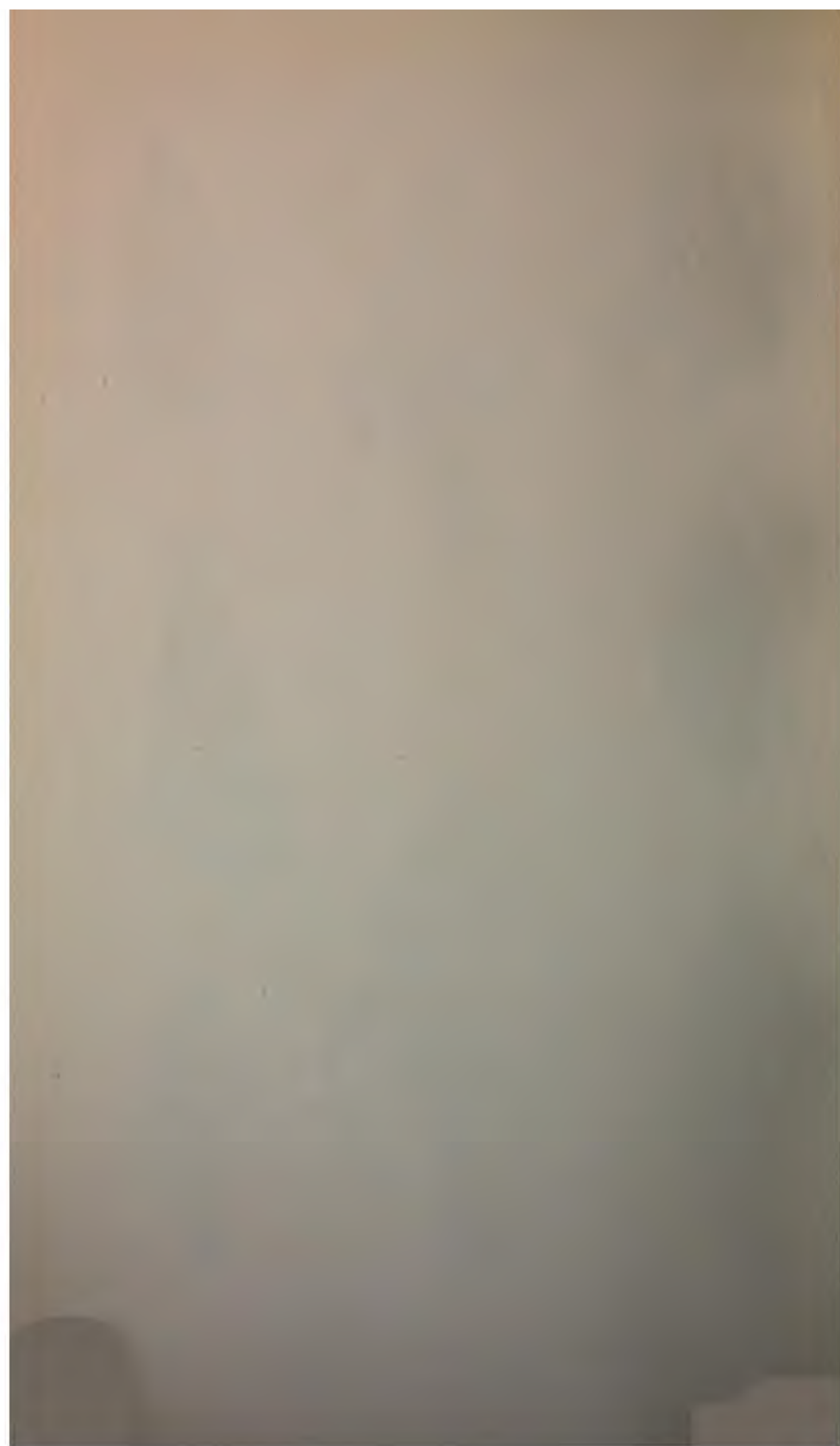
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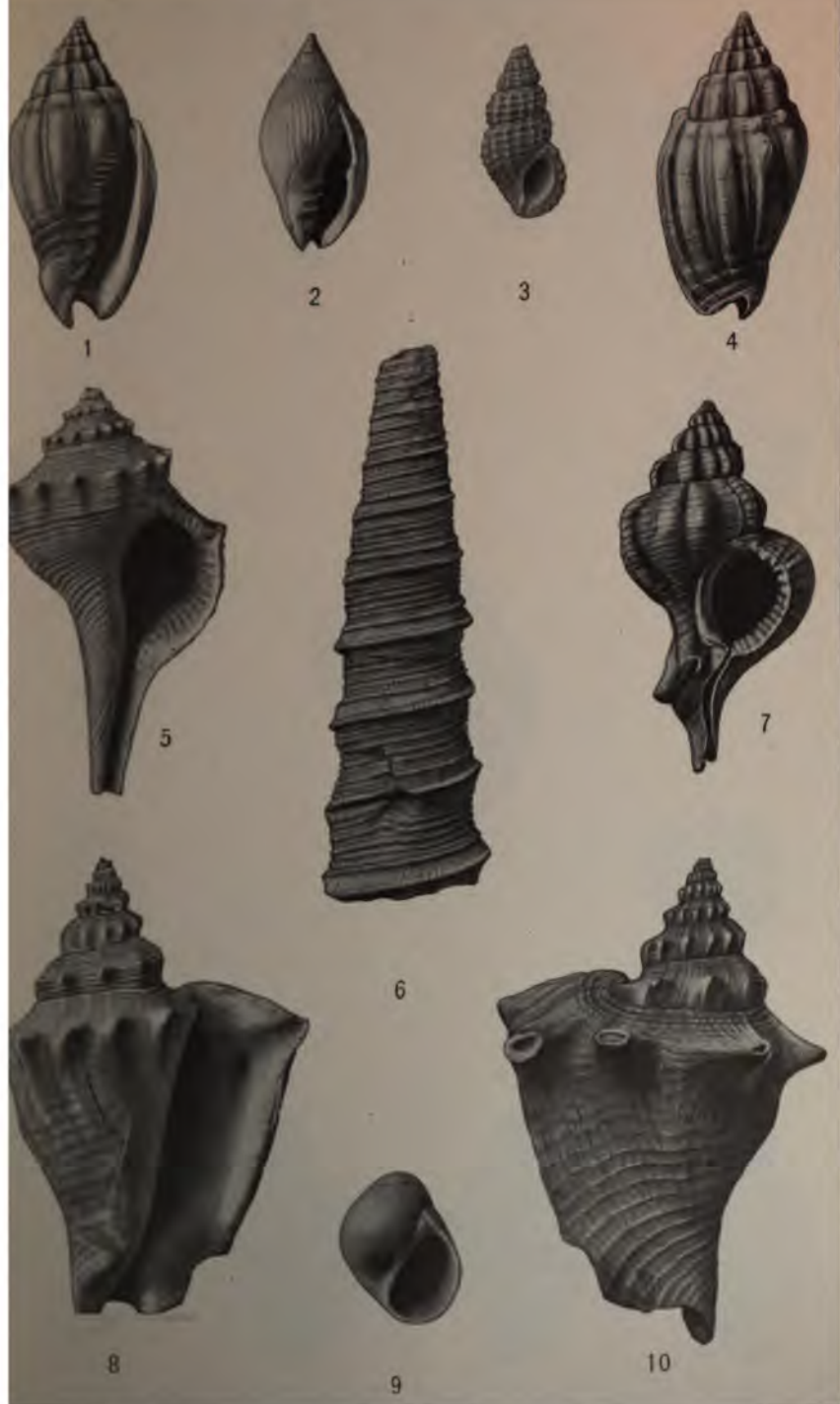




FOSSILS OF THE ORTHAULAX PUGNAX ZONE.

FOR EXPLANATION OF PLATE SEE PAGE 161.





FOSSILS OF THE ORTHAULAX PUGNAX ZONE.

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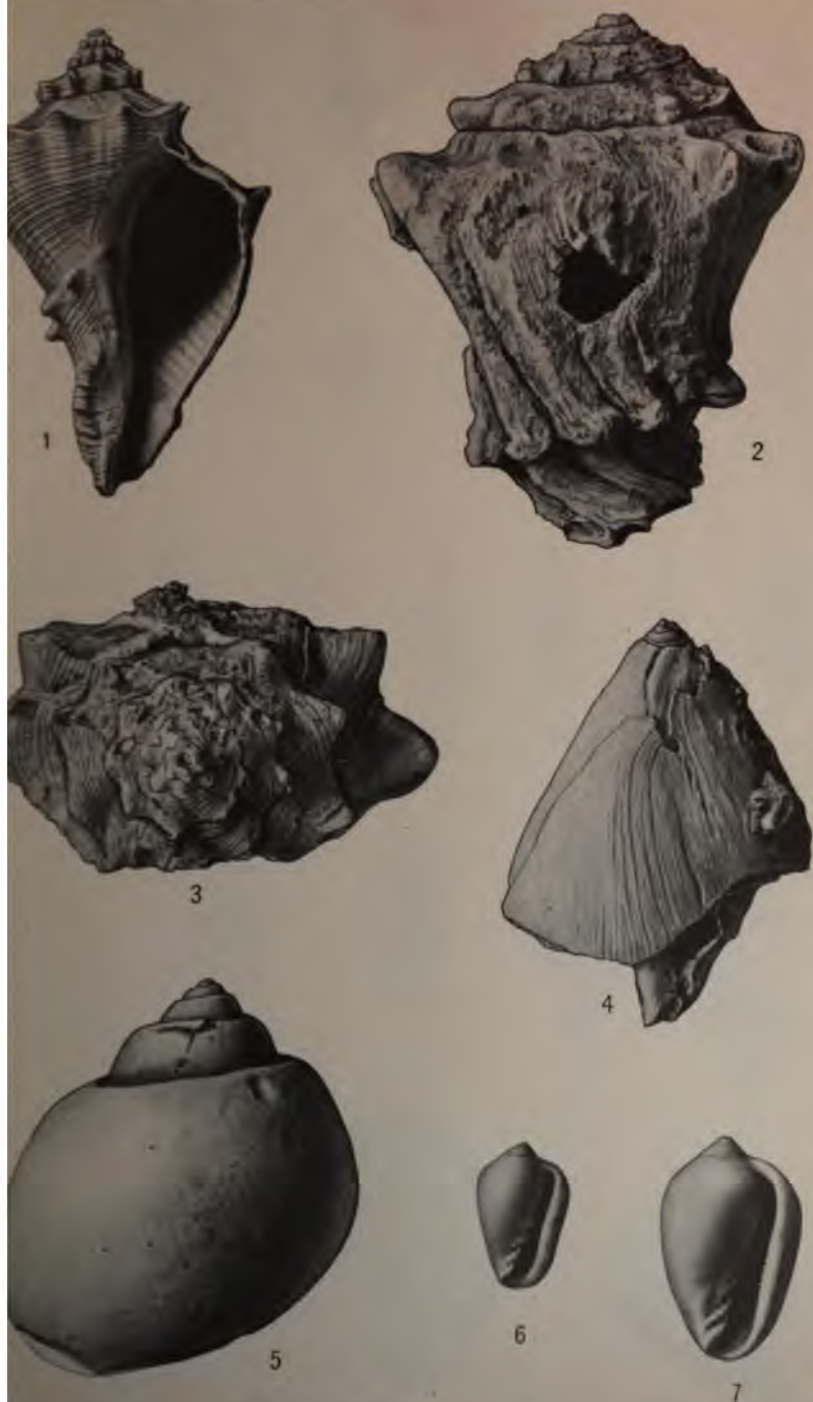




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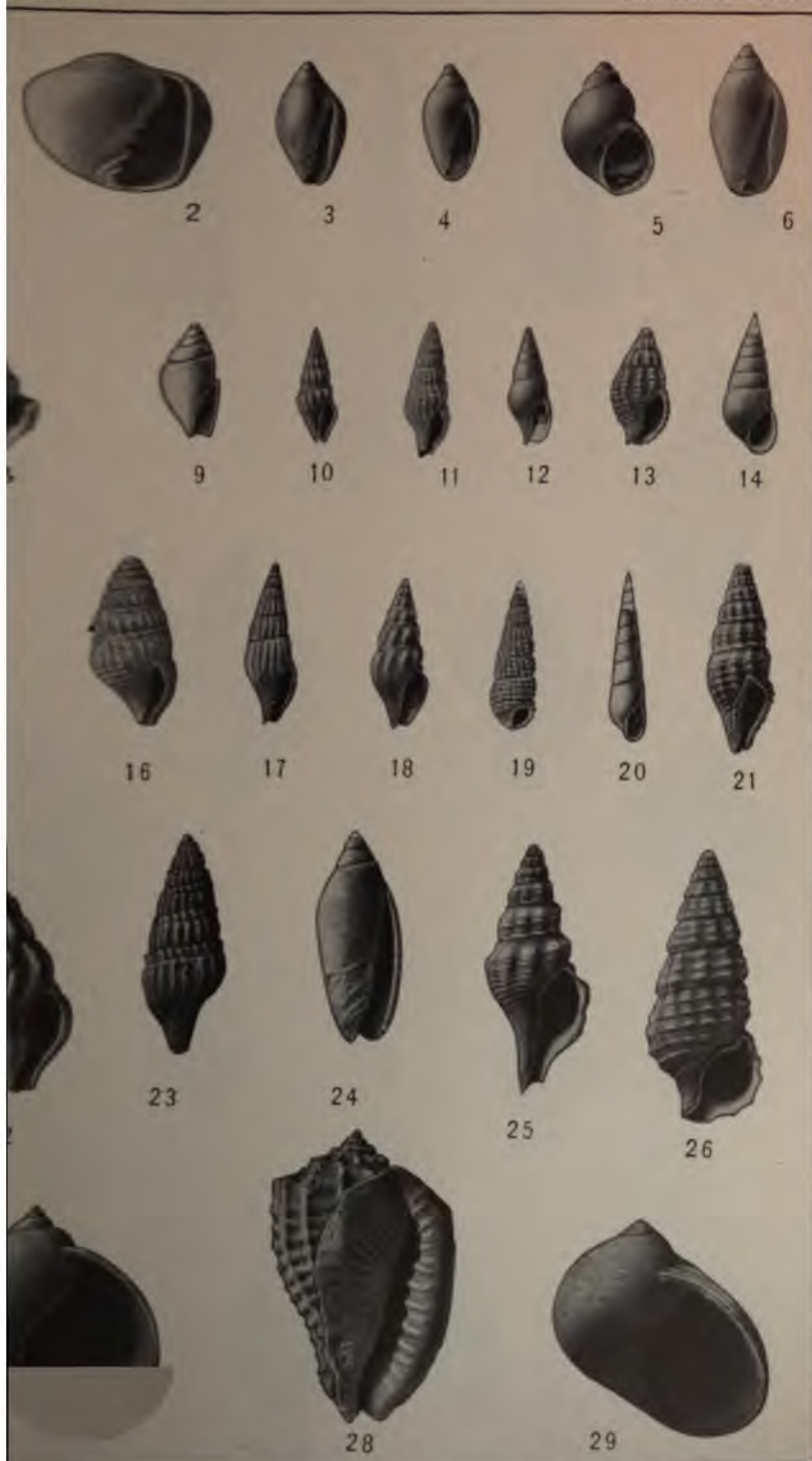




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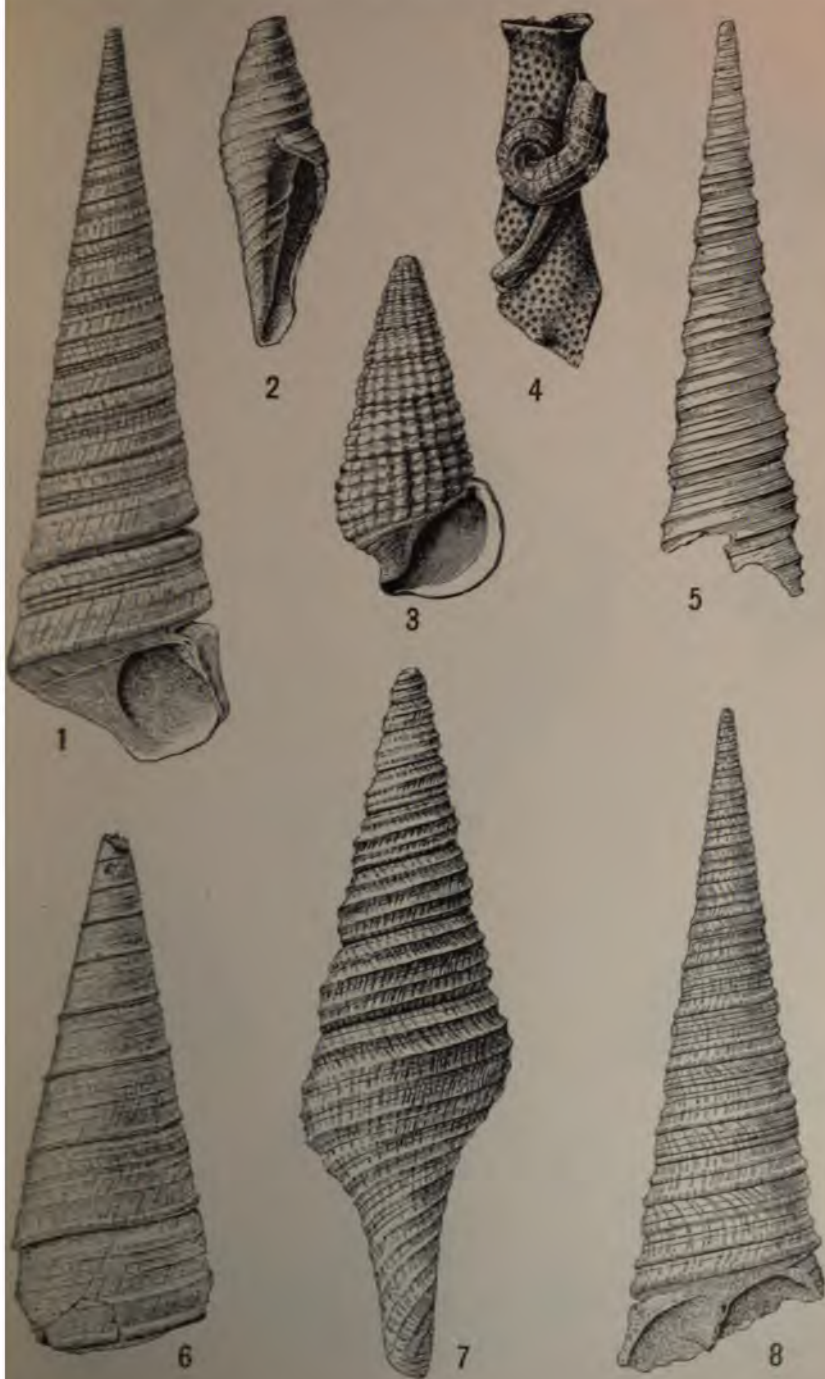
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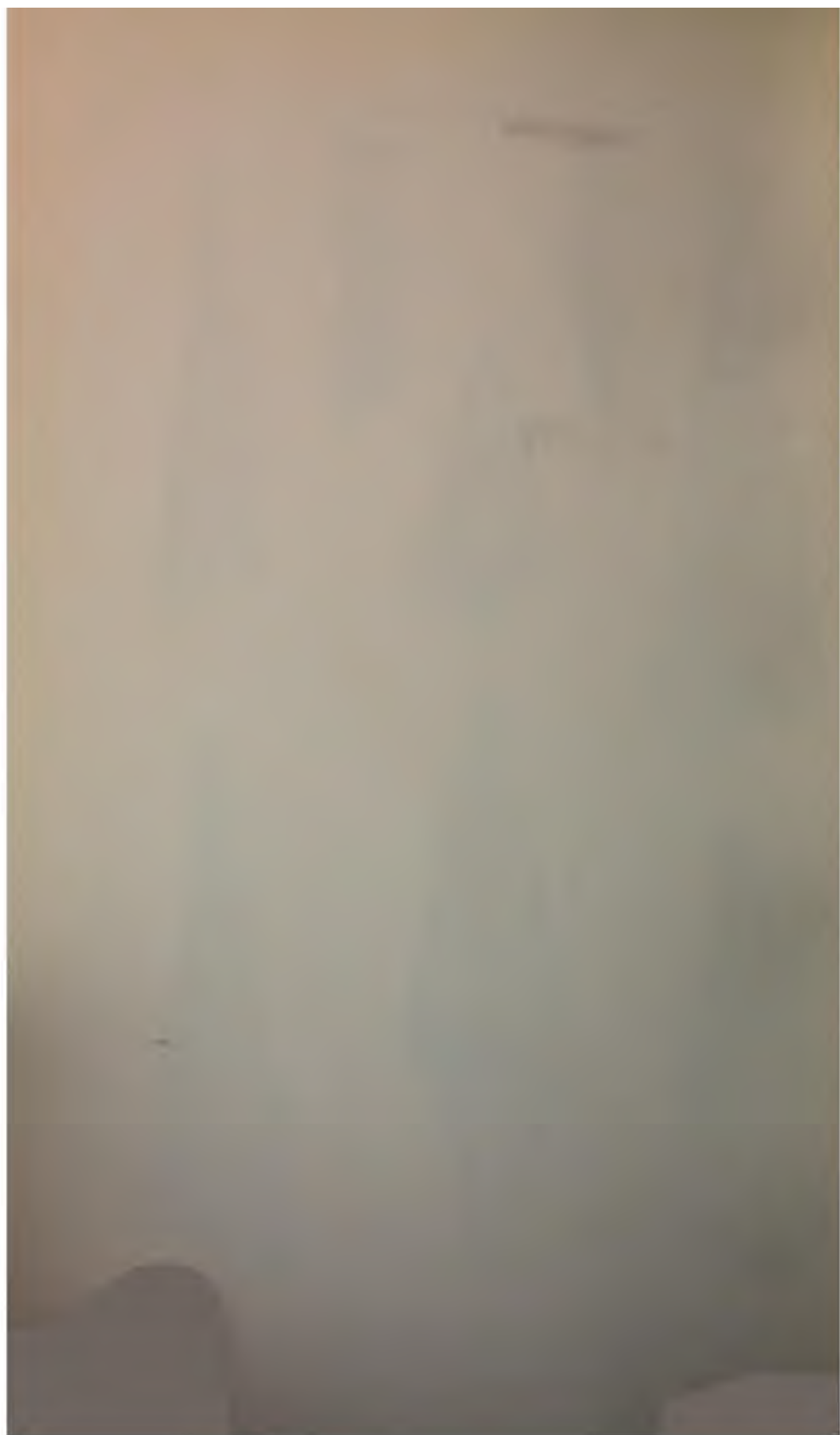
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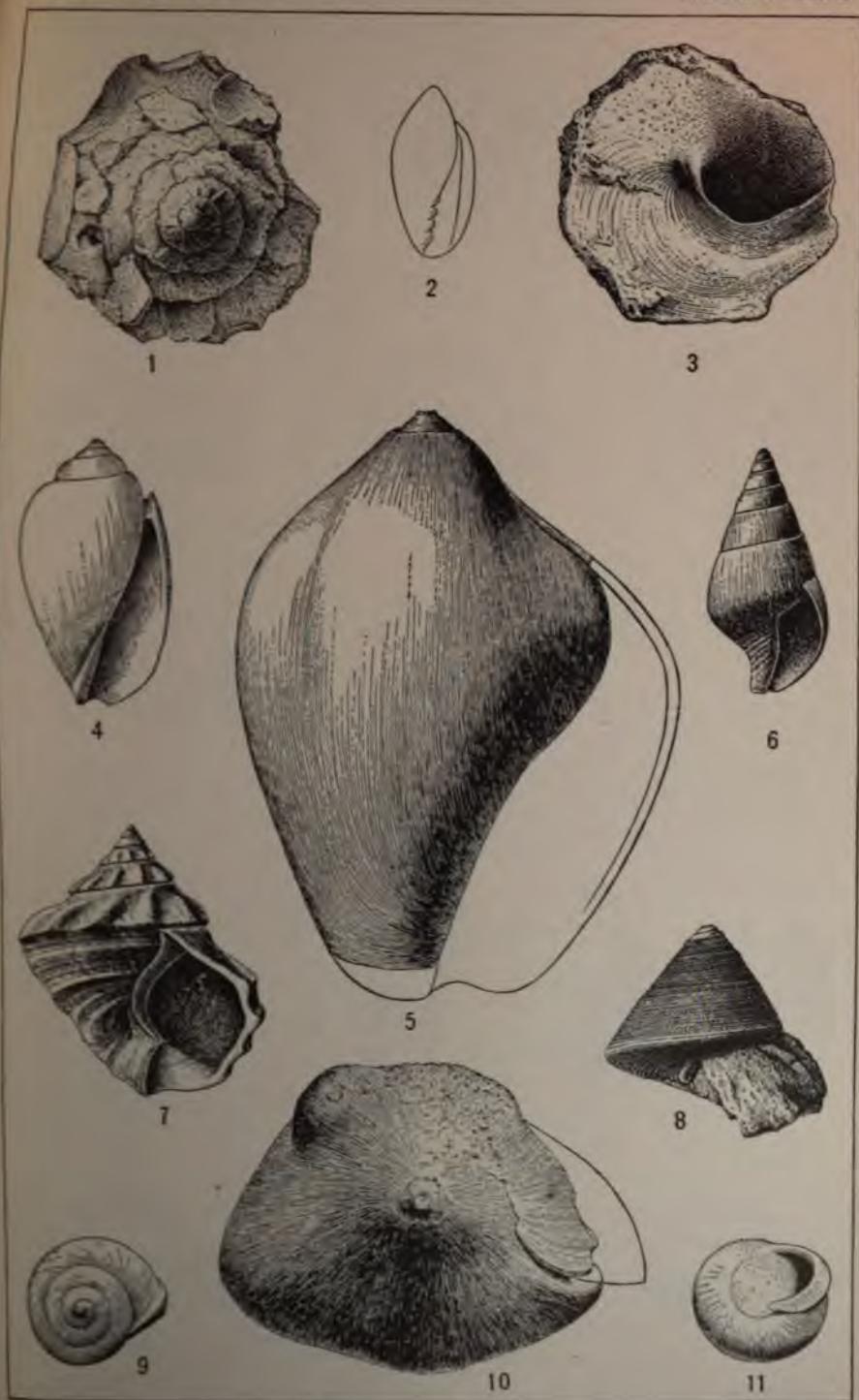
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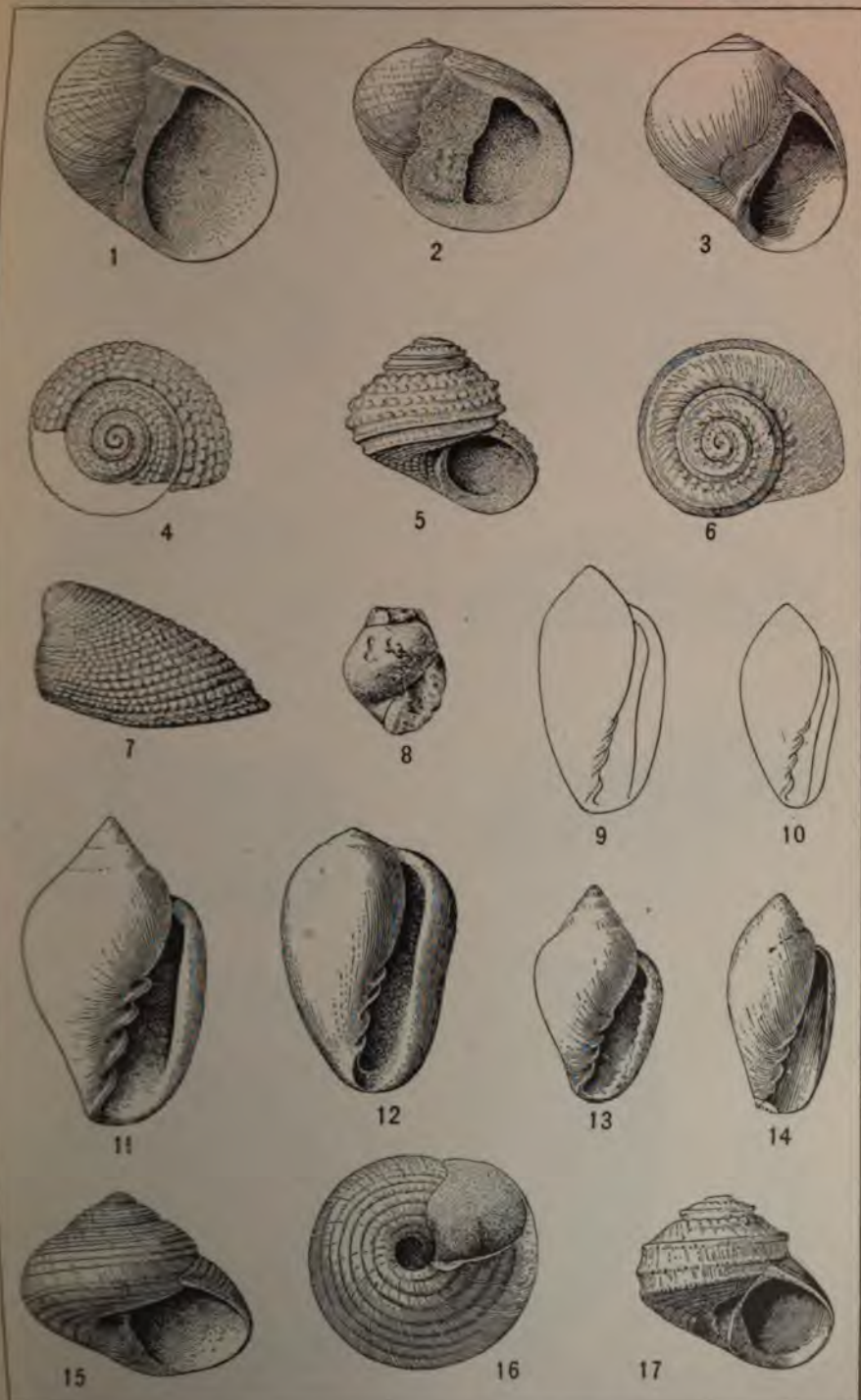
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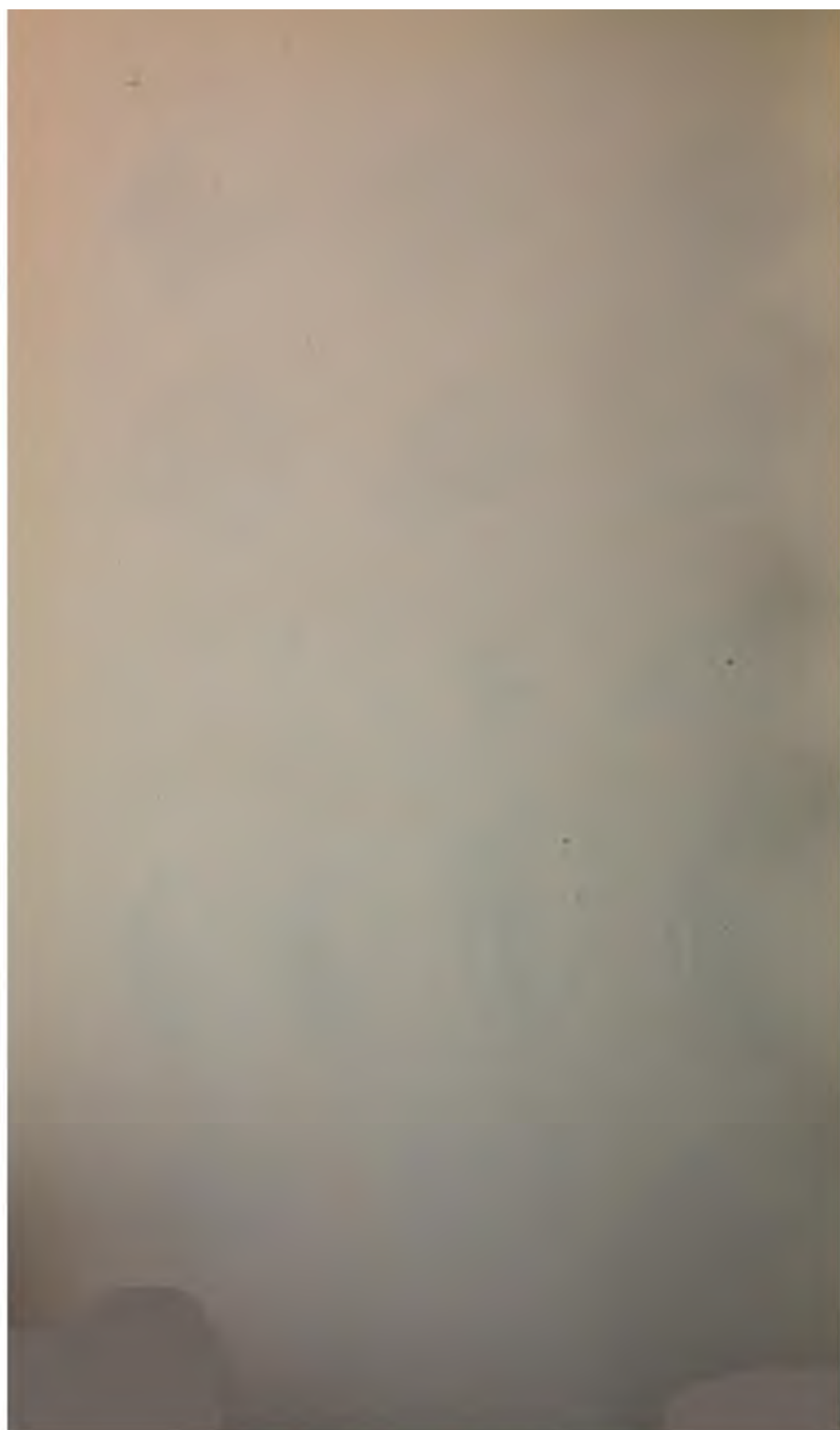
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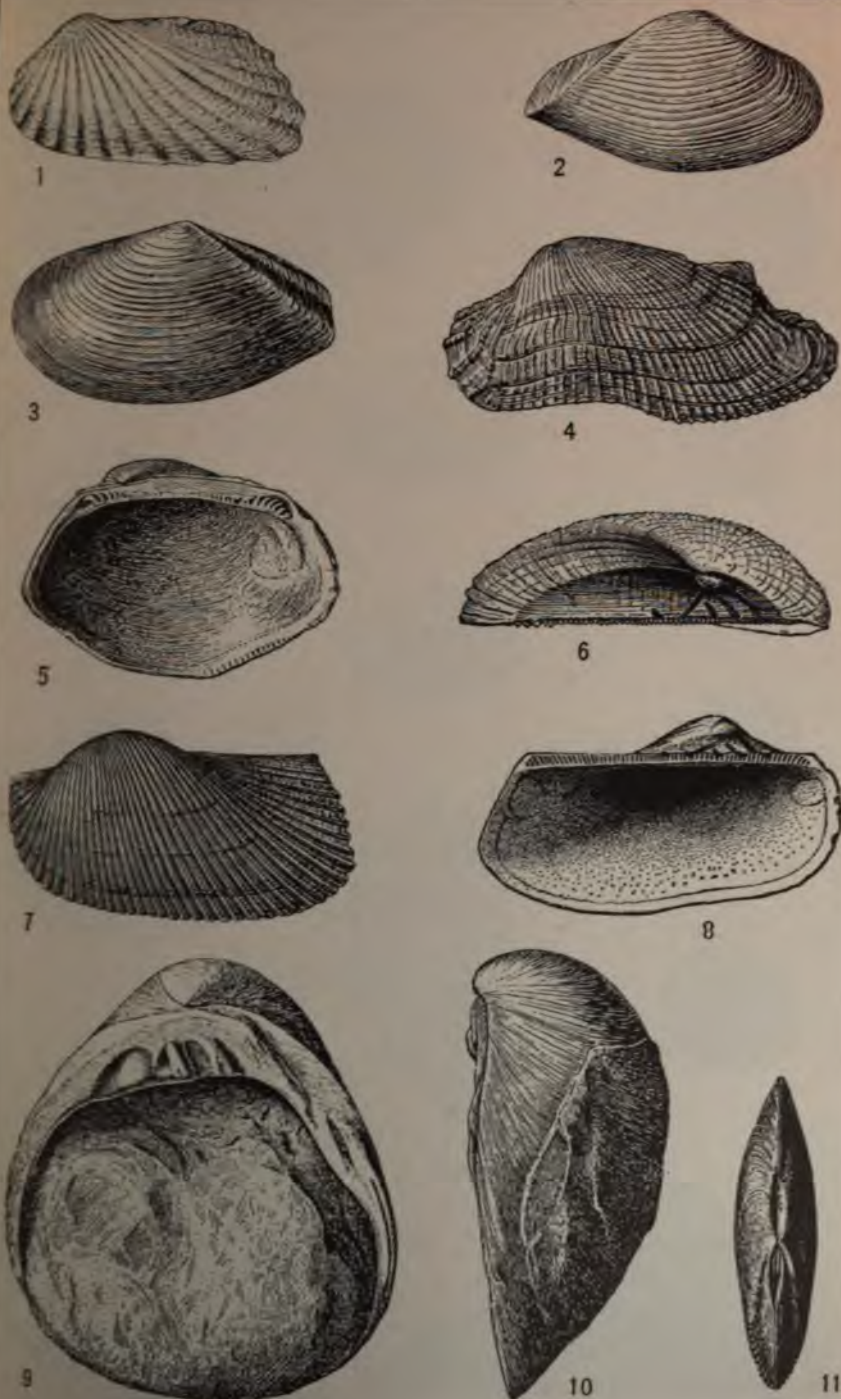




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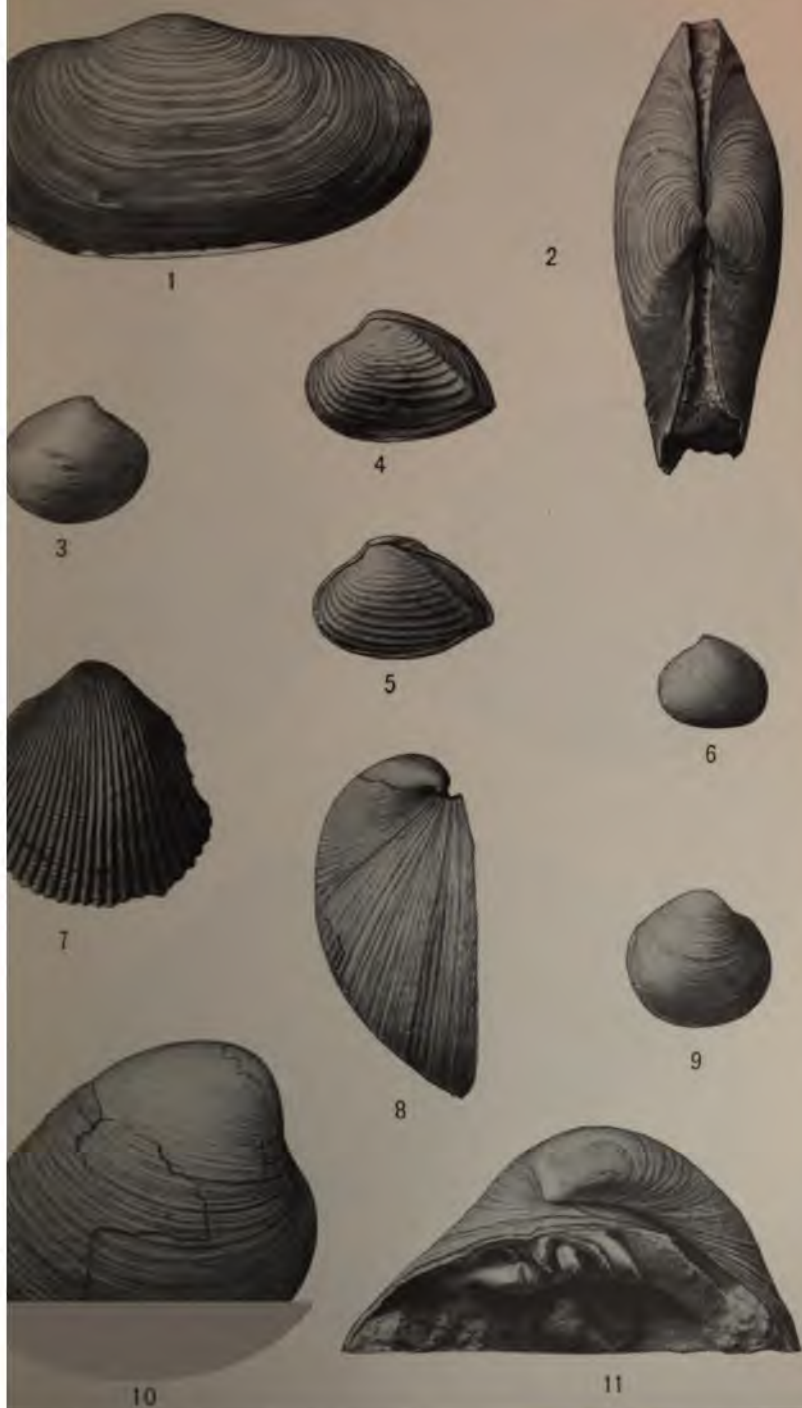




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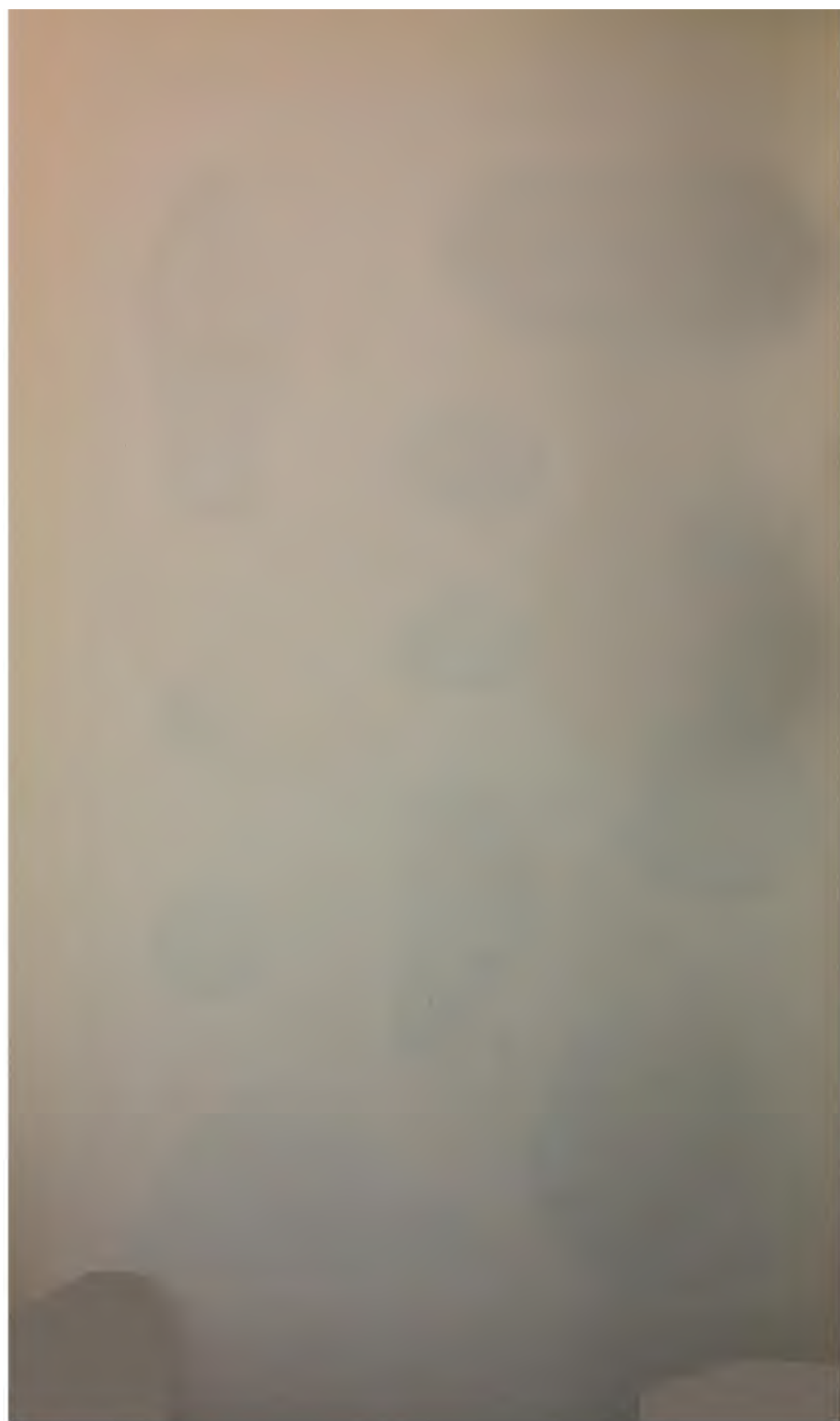
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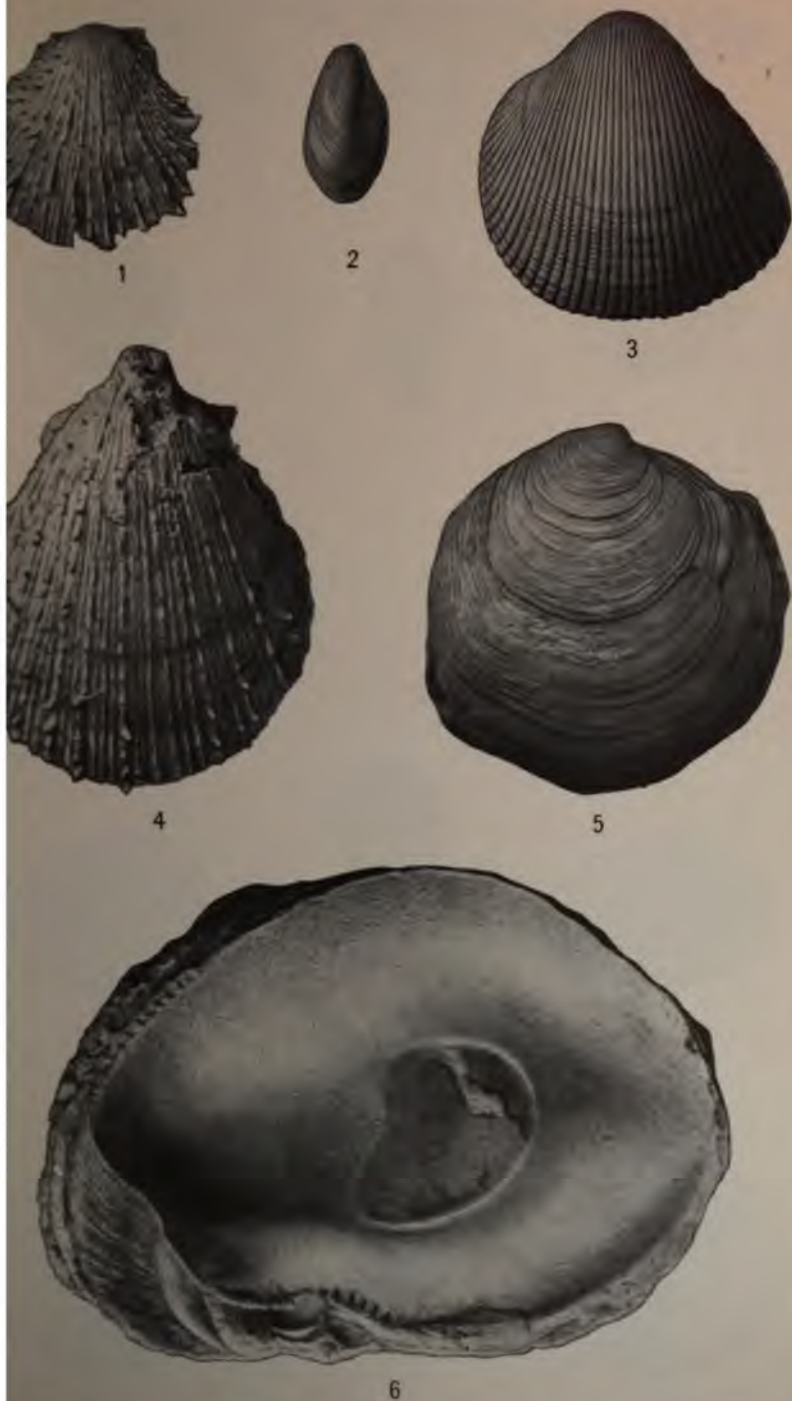




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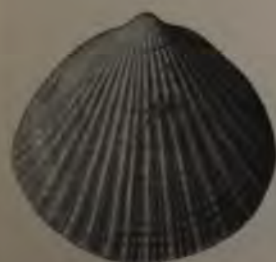
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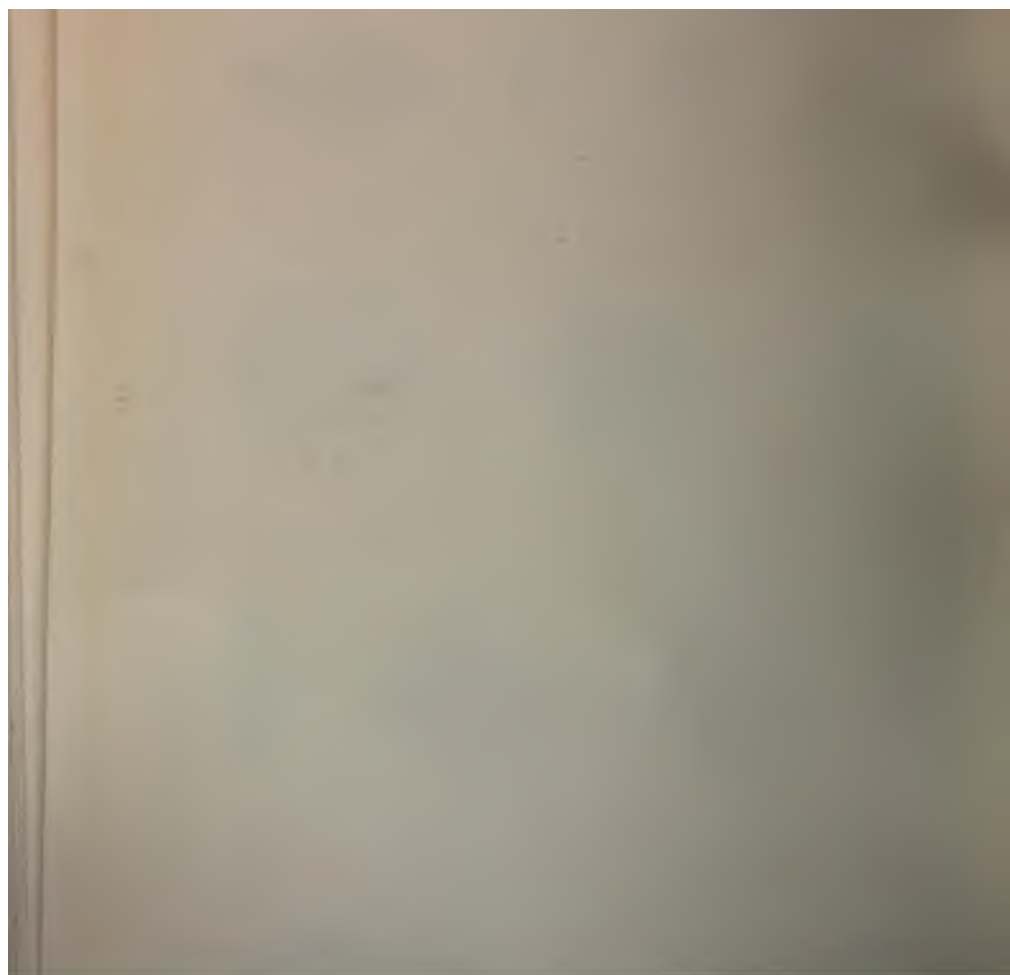
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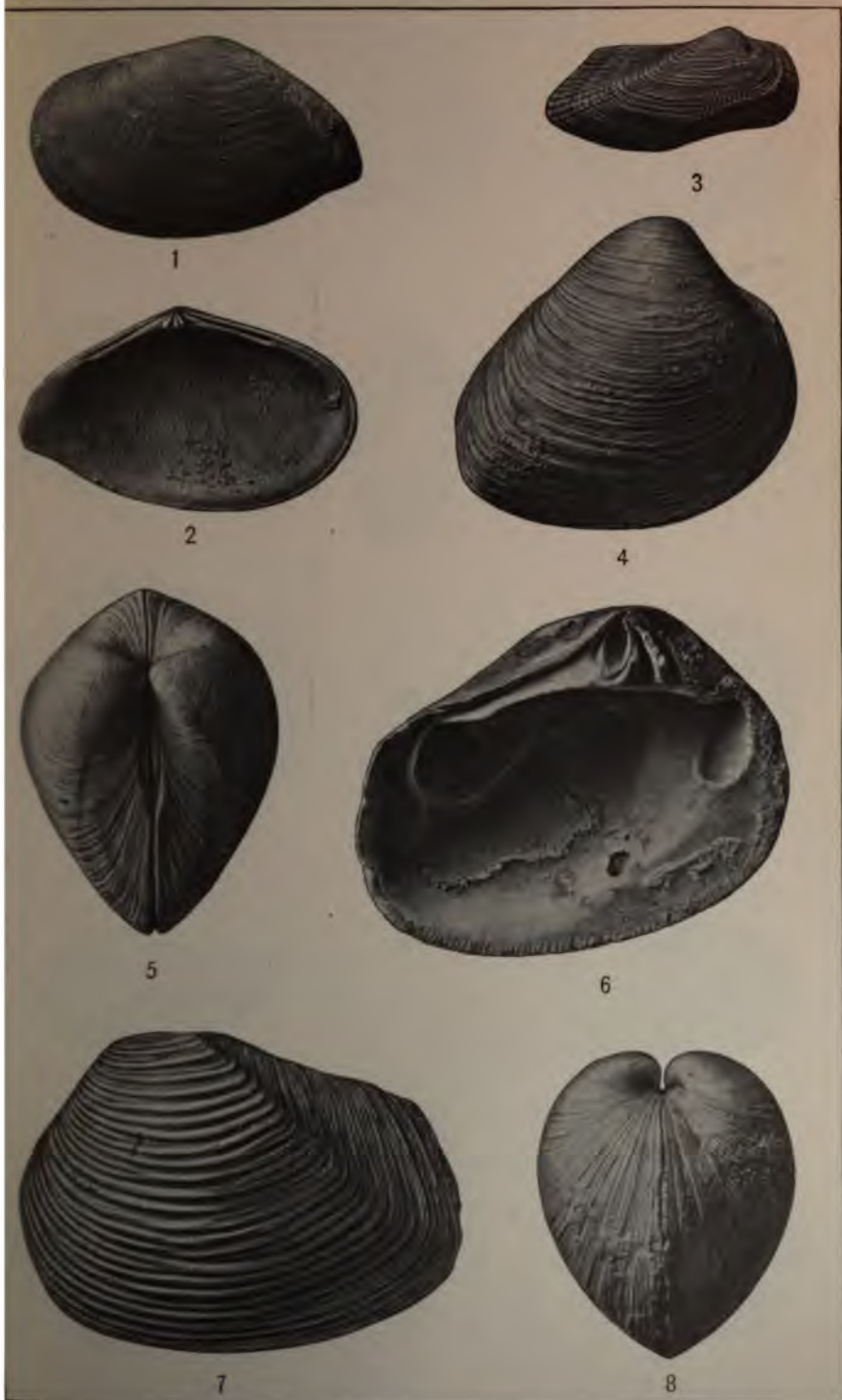
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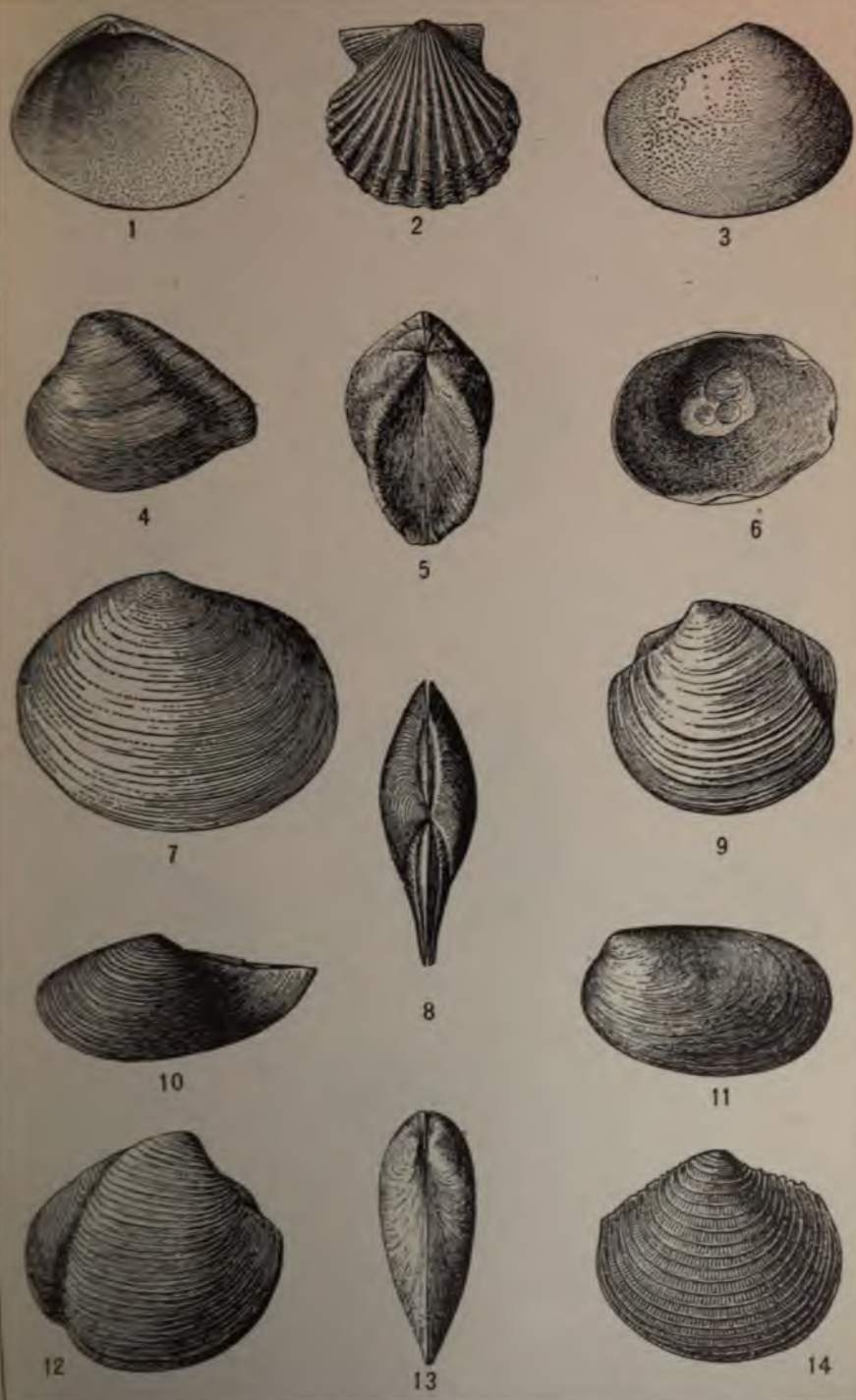




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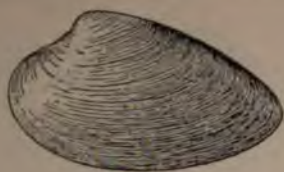
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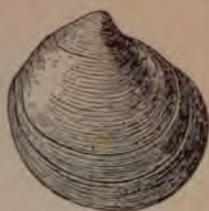




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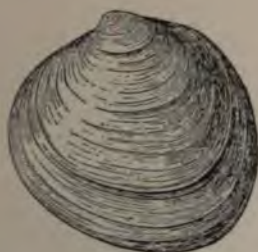
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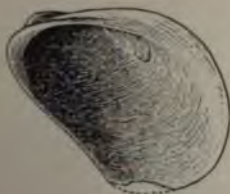
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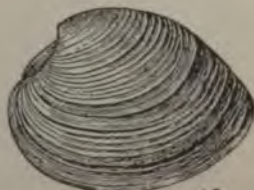
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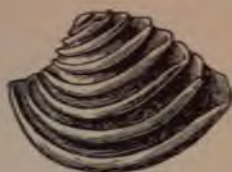




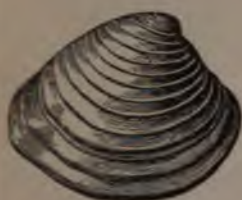
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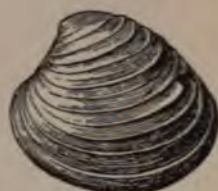
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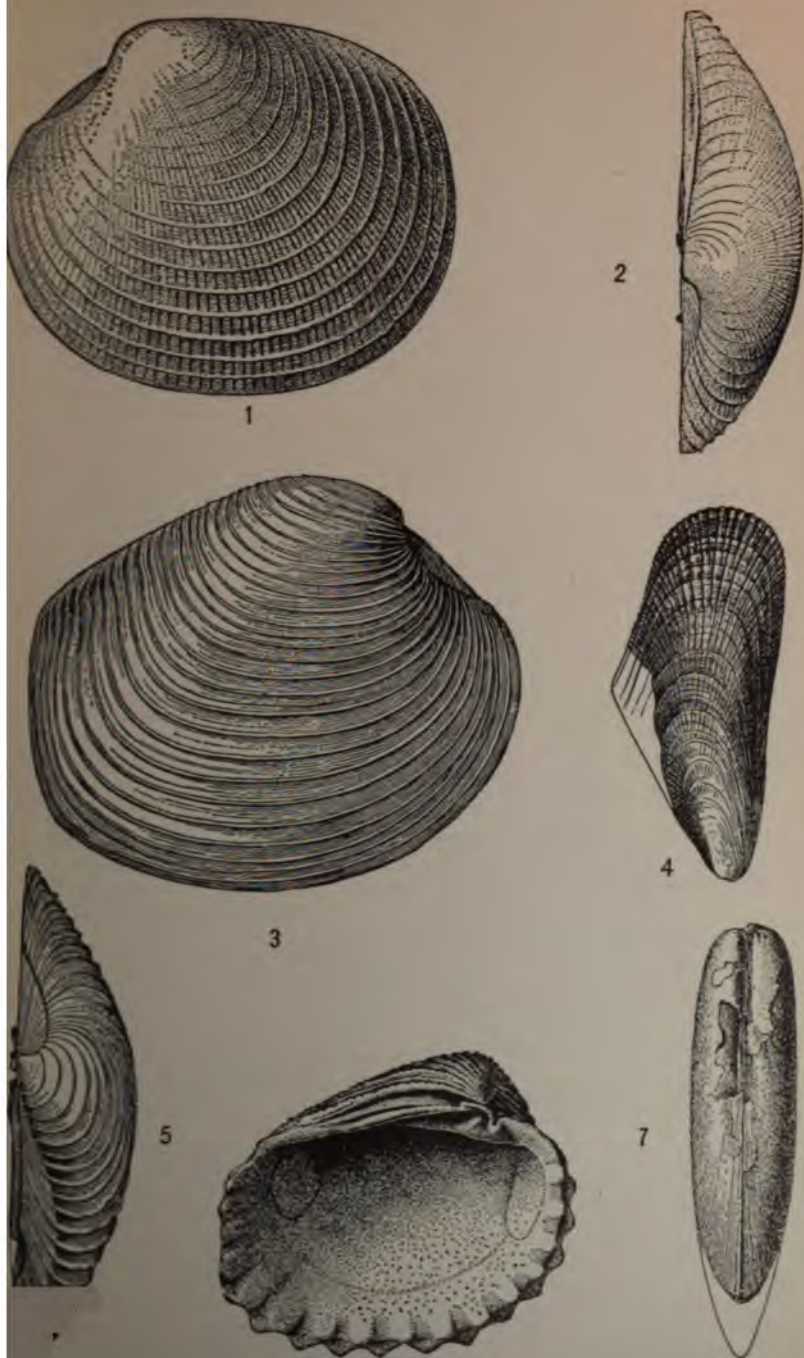


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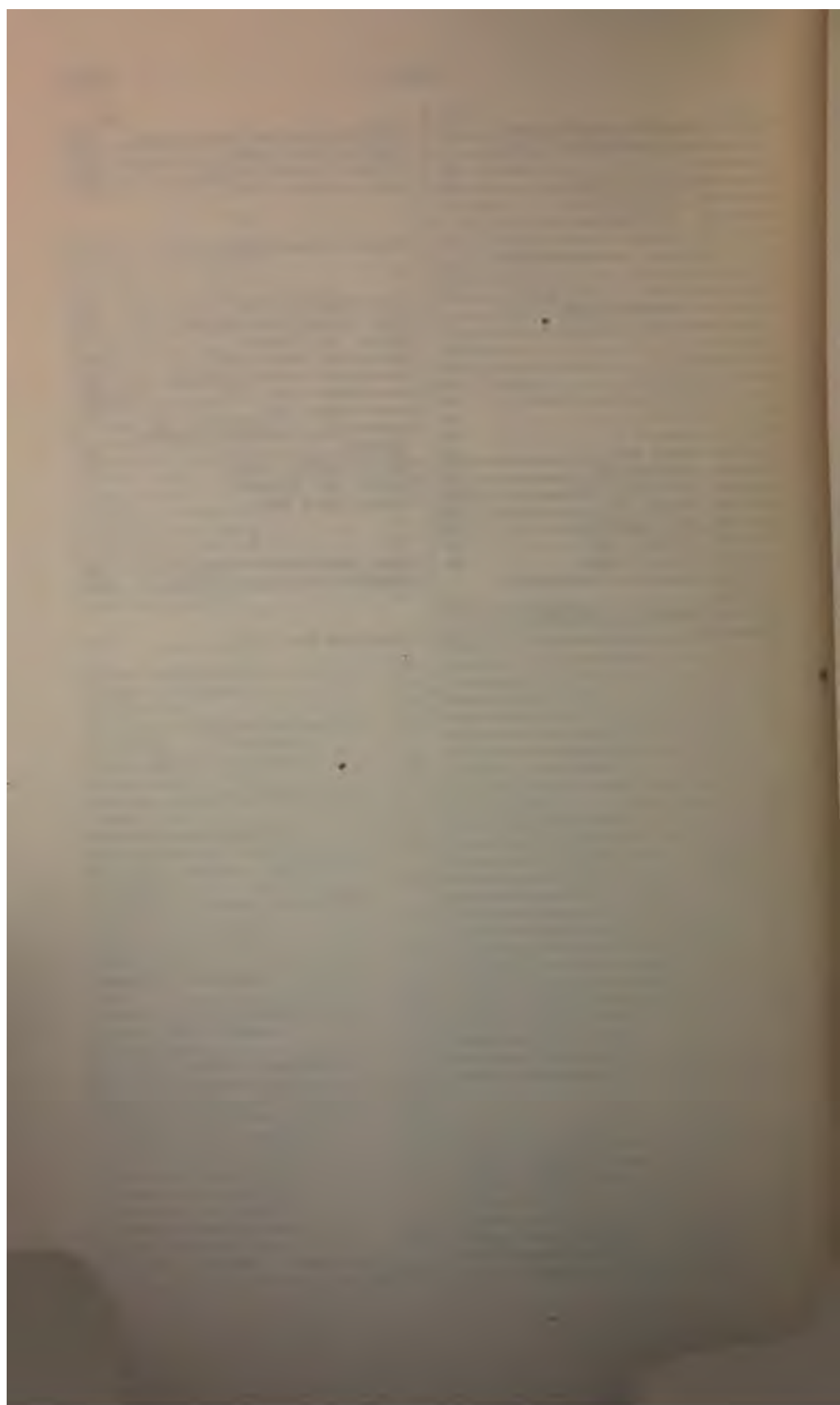
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SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM
Bulletin 91

REPORT ON THE TURTON COLLECTION OF SOUTH
AFRICAN MARINE MOLLUSKS, WITH ADDITIONAL
NOTES ON OTHER SOUTH AFRICAN SHELLS
CONTAINED IN THE UNITED STATES
NATIONAL MUSEUM

BY

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Issued July 28, 1915.

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ADVERTISEMENT.

The scientific publications of the United States National Museum consist of two series, the *Proceedings* and the *Bulletins*.

The *Proceedings*, the first volume of which was issued in 1878, are intended primarily as a medium for the publication of original, and usually brief, papers based on the collections of the National Museum, presenting newly acquired facts in zoology, geology, and anthropology, including descriptions of new forms of animals, and revisions of limited groups. One or two volumes are issued annually and distributed to libraries and scientific organizations. A limited number of copies of each paper, in pamphlet form, is distributed to specialists and others interested in the different subjects as soon as printed. The date of publication is printed on each paper, and these dates are also recorded in the table of contents of the volumes.

The *Bulletins*, the first of which was issued in 1875, consist of a series of separate publications comprising chiefly monographs of large zoological groups and other general systematic treatises (occasionally in several volumes), faunal works, reports of expeditions, and catalogues of type-specimens, special collections, etc. The majority of the volumes are octavos, but a quarto size has been adopted in a few instances in which large plates were regarded as indispensable.

Since 1902 a series of octavo volumes containing papers relating to the botanical collections of the Museum, and known as the *Contributions from the National Herbarium*, has been published as bulletins.

The present work forms No. 91 of the *Bulletin* series.

RICHARD RATHBUN,
Assistant Secretary, Smithsonian Institution,
in charge of the United States National Museum.

WASHINGTON, D. C., May 29, 1915.

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REPORT ON THE TURTON COLLECTION OF SOUTH AFRICAN
MARINE MOLLUSKS, WITH ADDITIONAL NOTES ON OTHER
SOUTH AFRICAN SHELLS CONTAINED IN THE UNITED
STATES NATIONAL MUSEUM.

By PAUL BARTSCH,

Curator, Division of Marine Invertebrates, United States National Museum.

INTRODUCTION.

Some years ago Lieut. Col. W. H. Turton, D. S. O., late Royal Engineers, presented a collection of marine mollusks from Port Alfred to the United States National Museum with a request for identification and report. The many duties of the staff of the Division of Mollusks and the absence of critically identified material from South Africa for comparison, rendered progress upon this report rather slow. About the time that the first sending was worked up, a second one arrived, and finally a third, each requiring a revision of the previous report. While this does not show in the text of the present paper, it will explain why the figures on the plates which accompany this report are not always in accord, so far as sequence is concerned, with the systematic arrangement of the text. It also explains why the type of illustrations used is not uniform, the line drawings being part of the report as first prepared, while the photographic method of illustration was adopted later.

Col. Turton informs me that he made these collections on four visits to Port Alfred, 1902, 1904, 1905, and 1911, staying there altogether 16 months. "The shells," he says further, "were all found within 10 miles of the village and were secured on the beach, without either dredging or diving." Judging from the fact that in many cases a single specimen only was secured, it seems quite possible that if equally careful collecting were continued in this place, especially if supplemented by dredging, many additions might be made to the already rather remarkable list.

In looking over the collection as a whole one is struck by the prevalence of red coloration, which seems explained by the fact that the red algae form the dominant element in the marine life of the region.

It was deemed advisable to render this report more complete by considering with it all the mollusks contained in the United States National Museum from the *South African* expedition, and while this is not a large series, there are nevertheless some very important shells, namely, Gould's "types," William Stimpson, the zoologist of the North Pacific expedition, at Cape Good Hope, Simons Bay, and False Bay, from September 12 to November 9, 1853. These types are now in the collection for the first time, and a little fuller diagnosis is given of the same.

At the end of this paper I have given what I believe to be a list of all the species that have been reported from South Africa. There are in the United States National Museum no specimens of the species from that region. In this list the type-locality from which the species were originally described is cited. It is hoped that this list will serve as a stimulus to future collecting, and that it may induce those authors who have wrongly identified material to reconsider their decisions, which will doubtless result in the expunging of erroneous records from a list which appears heavily laden with them.

This report would be incomplete did I not acknowledge my obligations to Dr. William H. Dall, honorary curator of the Division of Mollusks, for much assistance in its preparation, particularly in the treatment of the part dealing with the bivalves.

I wish also to state that the line drawings of plates 1-10 were made by Evelyn Grosbeck Mitchell, while the photographs were made by Mr. T. W. Smillie, of the National Museum, and retouched by E. Bennett Decker. The collection numbers in parentheses are those given by Colonel Turton.

SYSTEMATIC LIST.

Phylum MOLLUSCA.

Class CEPHALOPODA.

Order DIBRANCHIATA.

Family ARGONAUTIDAE.

Genus ARGONAUTA Linnaeus.

ARGONAUTA ARGO Linnaeus.

Cat. No. 227802, U.S.N.M., one specimen from Port Natal (Cat. No. 897).

Family SPIRULIDAE.

Genus SPIRULA Lamarck.

SPIRULA PERONII Lamarck.

Cat. No. 186647, U.S.N.M., one specimen from Port Alfred (Coll. No. 1).

Class GASTROPODA.

Order PTEROPODA.

Family CAVOLINIDAE.

Genus CAVOLINA Abildgaard.

CAVOLINA LONGIROSTRIS Lesueur.

Cat. No. 227808, U.S.N.M., two specimens from Port Alfred (Coll. No. 903).

CAVOLINA GLOBULOSA Rang.

Cat. No. 250588, U.S.N.M., contains one specimen of this species from Port Alfred (Coll. No. 1461).

Genus STYLIOLA (Lesueur) Gray.

STYLIOLA AFRICANA, new species.

Plate 34, fig. 4.

Shell similar to *Styliola virgula* Rang, but in every way stouter and considerably less curved.

The type and another specimen, Cat. No. 249794, U.S.N.M., come from Port Alfred (Coll. No. 1066). The type measures: Length, 4 mm.; diameter, 1.2 mm.

Order TECTIBRANCHIATA.

Family ACTEONIDAE.

Genus ACTEON Montfort.

ACTEON ALBUS Sewerby.

Cat. No. 186658, U.S.N.M., one specimen from Port Alfred (Coll. No. 13).

Genus BULLINA Ferussac.

BULLINA SCABRA Gmelin.

Two specimens, Cat. Nos. 249798 and 250582, both from Port Alfred, are in the collection of the United States National Museum (Coll. Nos. 1070 and 1455).

Family TORNATINIDAE.

Genus ACTEOCINA Gray.

ACTEOCINA SMITHI, new species.

Plate 1, fig. 9.

Shell cylindric, semitransparent. Nuclear whorls small, rounded, smooth, forming a planorboid spire whose axis is at right angles to that of the succeeding turns. The nucleus surmounts fairly well elevated spire formed by the succeeding turns. Five nuclear whorls, five, cylindric, slightly contracted in the middle, gently rounded anteriorly and more abruptly at the summit. The parietal wall is covered by a thick callus which extends posteriorly over the preceding whorl, a little higher than the outer wall of the whorl, with which it is united by a U-shaped bridge, that joins the outer wall so as to form an exceedingly acute ridge; a deep channel there separates the outer from the parietal summit on the last whorl.

Entire surface marked by very regularly spaced, fine, raised spiral threads, that are separated by spaces about as wide as the threads. These threads curve strongly posteriorly in the middle. In addition to the axial sculpture, the basal half of the shell is marked by fine spiral striations which are best developed near the base.

Aperture reversed comma-shaped, posterior half of about equal width, anterior half expanding gradually from the middle of the wall; outer lip thin, curved; parietal wall covered by a thick callus which is continuous with and reflected over the columella. The columella joins the outer lip in an even curve.

There are two specimens, cotypes, in the collection, from Port Alfred, Cat. No. 186657, U.S.N.M. (Coll. No. 12). One, an adult somewhat rubbed, the other a young perfect individual. The former measures: Length, 4.5 mm.; diameter, 2.0 mm. The latter: Length, 3.5 mm.; diameter, 1.7 mm.

These specimens were sent to us by Col. Turton under the name *Tornatina voluta* Quoy and Gaimard. It is possible that this is a species that has been reported from Port Alfred under that name. It is not *T. voluta* Quoy and Gaimard. That species, which was originally described from Guam,¹ is much larger, length, 10.5 mm., diameter, 4.2 mm., and is said to be smooth.

ACTEOCINA, species?

Cat. No. 250577, U.S.N.M., contains a young specimen belonging to this genus, from Port Alfred (Coll. No. 1450).

Genus RETUSA Brown.

RETUSA TRUNCATULA Bruguiere.

Cat. No. 186659, U.S.N.M., six specimens from Port Alfred (Coll. No. 14).

¹ Voyage de l'Atalante, p. 359, pl. 50, figs. 33-35, 1832.

Genus VOLVULA A. Adams.

VOLVULA, species?

Cat. No. 250583, U.S.N.M., contains one specimen of this genus, from Port Alfred, which unfortunately has lost part of the lip, which renders positive identification impossible. (Coll. No. 1456).

Family SCAPHANDRIDAE.

Genus CYLICHNA Loven.

CYLICHNA AFRICANA, new species.

Plate 1, fig. 8.

Shell, white, subcylindric, spire deeply sunken, giving the apex a perforate appearance. The body whorl is somewhat contracted in the middle, rendering the outline of the sides concave. The entire surface is marked by slender, subequally spaced axial riblets, which give it a finely fluted appearance. Aperture long, narrow posteriorly, roundly expanded anteriorly; outer lip parallel to the parietal wall except at the expanded basal fourth of the shell. The outer lip projects considerably above the summit of each preceding turn, marking the highest elevation of each turn. The parietal wall of the last turn is covered with a thin callus, which is continued posteriorly to form the parietal wall of that part of the aperture which projects above the summit of the preceding turn. The outside of the parietal wall within the perforated top, is marked by the continuations of the riblets. Columella with an inconspicuous oblique twist near the middle, short, slender, finely curved, connected at the base with the parietal callus.

The type and three specimens, Cat. No. 187147, U.S.N.M., were collected at Port Alfred (Coll. No. 694). The type measures: Length, 3.4 mm.; diameter, 1.4 mm.

This species resembles *Cylichna hoernesii* Weinkauff from the Mediterranean. It is, however, a little less contracted posteriorly, has the outer lip extending much higher posteriorly, and lacks the fine striations of the spire as well as the strongly incised spiral lines of the base.

CYLICHNA TUBULOSA Genld.

Plate 3, fig. 5.

Cylichna tubulosa GOULD, Proc. Bost. Soc. Nat. Hist., vol. 7, p. 40, 1859.

Shell cylindric, a very little wider anteriorly than posteriorly, white or creamy yellow. Spire submerged and covered; posterior end slightly concave, the highest portion being in line with the backward continuation of the outer lip. Left outline of the body whorl almost straight, curving gently toward either end. Inner lip quite evenly

curved. Outer lip thin, corresponding in curvature to the left of the body whorl. Surface marked by fine incremental lines very fine, closely and evenly spaced, wavy, spiral striations. Aperture narrow, scarcely at all widened posteriorly, and very slightly anteriorly. Parietal callus forming a thick rounded fold anteriorly. Gould's type, Cat. No. 164, U.S.N.M., was collected by William Stimpson, on the North Pacific Exploring Expedition at Simsbury Bay. It measures: Length, 8 mm.; diameter, 2.6 mm. Cat. No. 249801, U.S.N.M., contains another specimen from Port Alfred (Coll. No. 1073).

Family BULLARIIDAE.

Genus BULLARIA Rafinesque.

BULLARIA AMPULLA Linnaeus.

Cat. No. 43129, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 186654, U.S.N.M., one from Port Alfred (Coll. No. 1073).

BULLARIA, species?

Cat. No. 249797, U.S.N.M., three shells from Port Alfred, too immature to make identification positive (Coll. No. 1069).

Family AKERATIDAE.

Genus HAMINEA Leach.

HAMINEA ALFREDENSIS, new species.

Plate 1, fig. 5.

Shell irregularly pear-shaped, thin and translucent, light green yellow. The anterior portion of the outer lip projects considerably above the spire and stands off quite a distance from the parietal wall posteriorly, and very much anteriorly where it becomes quite pediculate. The shell has a somewhat pinched appearance at the middle of the anterior half, which renders that portion flattened or even slightly concave. Base well rounded. Aperture very large; columella very strongly curved, reinforced at the edge by a narrow, reflected callus which expands and spreads over the interior of the lip at its anterior extremity; parietal wall covered by a callus. Entire surface marked by fine incremental lines and exceedingly fine, closely spaced spiral striations.

The type measures: Length, 12.4 mm.; diameter, 10 mm. If another specimen come from Port Alfred, they are entered as Cat. No. 186656, U.S.N.M. (Coll. No. 10).

The present form differs from *natalensis* Krauss in having the posterior half of the spire flattened instead of evenly rounded, while *alfredensis* a pear-shaped outline while *natalensis* is a

Three additional lots from the same locality are in the United States National Museum. Cat. No. 227803, 10 specimens from Port Alfred (Coll. No. 898). Cat. No. 227806, three young individuals (Coll. No. 901). Cat. No. 250581, a very young individual (Coll. No. 1454).

Family RINGICULIDAE.

Genus RINGICULA Deshayes.

RINGICULA TURTONI, new species.

Plate 1, fig. 4.

Shell subovate, polished, white. The nucleus consists of a single turn, which has the same outline as the succeeding whorls but lacks their sculpture, being smooth and shining. Post-nuclear turns greatly inflated, separated by strongly marked sutures and ornamented by deeply incised spiral grooves, of which four appear on the spire of each whorl in the type. In addition to these spiral grooves, the whorls are marked at irregular intervals by moderately strong lines of growth, between which there are many microscopic, axial, wavy lines. Periphery and base of the last whorl well rounded, marked by the same vertical sculpture as the spire and at least three spiral grooves, the anterior half being covered by a thick callus. Aperture auriculate, strongly channeled anteriorly; outer lip very much thickened, provided with a low denticle on the middle of the inner edge; columella very stout, covered by a heavy callus, which is reflected over the basal part of the shell, armed with two equally strong, oblique folds, the anterior of which is at the anterior edge and the other about halfway between this and the insertion of the columella; parietal wall covered with a very strong callus, which reaches posteriorly over half of the spire of the last turn and forms a strong elongated denticle which apposes the denticle of the outer lip.

The type has six whorls and measures: Length, 4.7 mm.; diameter, 3 mm.

The two additional specimens have three and five spiral grooves on the spire and four and six, respectively, on the base. They were collected at Port Alfred, Cape Colony, and form Cat. No. 187050, U.S.N.M. (Coll. No. 588). Another specimen from the same locality is listed as Cat. No. 250586 U.S.N.M. (Coll. No. 1459).

The nearest relative to this species appears to be *Ringicula coliaris* Gould, the type of which, Cat. No. 1692, U.S.N.M., was collected by William Stimpson at Hakodadi, Japan. This, however, is a much larger species. The type, which has six whorls, measures: Length, 5.3 mm.; diameter, 3.6 mm.

RINGICULA AFRICANA, new species.

Plate 33, fig. 4.

Shell ovate, milk white; spire decidedly elevated. Whorls strongly rounded and feebly shouldered at the summit; the first and second

Order PULMONATA.

Family AURICULIDAE.

Genus MELAMPUS Montfort.

MELAMPUS ACINOIDES Morelet.

Cat. No. 186648, U.S.N.M., two specimens from Port Alfred (Coll. No. 2).

MELAMPUS, species?

Cat. No. 250594, U.S.N.M., contains a worn specimen of a *Melampus* larger than the above species, from Port Alfred, which I am unable to identify (Coll. No. 1467).

Genus MICROTRALIA Dall.

MICROTRALIA, species?

Cat. No. 250595, U.S.N.M., one young specimen from Port Alfred (Coll. No. 1468).

Family SIPHONARIIDAE.

Genus SIPHONARIA Sowerby.

SIPHONARIA CONCINNA Sowerby.

Cat. No. 19194, U.S.N.M., two specimens collected by William Stimpson on the North Pacific Exploring Expedition at Cape of Good Hope. Cat. No. 31567a, U.S.N.M., three young specimens from the same locality. Cat. No. 186651, U.S.N.M., three specimens from Port Alfred (Coll. No. 5).

SIPHONARIA CAPENSIS Quoy and Gaimard.

Cat. No. 19188, U.S.N.M., one specimen collected by Archer at Cape of Good Hope. Cat. No. 21821, U.S.N.M., one specimen from Dunker, collected at the same locality. Cat. No. 31567, U.S.N.M., one specimen from Cape of Good Hope. Cat. No. 173070, U.S.N.M., one specimen from Lieut. Col. L. W. Wilmer from Cape of Good Hope. Cat. No. 250574, U.S.N.M., contains three very young specimens from Port Alfred (Coll. No. 1447).

SIPHONARIA CAPENSIS LINEOLATA Krauss.

Cat. No. 31565, U.S.N.M., two specimens from Cape of Good Hope. Cat. No. 31570, U.S.N.M., three specimens from the same locality. Cat. No. 186652, U.S.N.M., two specimens from Port Alfred (Coll. No. 6), and another, Cat. No. 250575, U.S.N.M., from the same locality (Coll. No. 1448).

SIPHONARIA ASPERA Krauss.

Cat. No. 186653, U.S.N.M., two specimens from Port Alfred (Coll. No. 7).

SIPHONARIA OCLUS Krauss.

Cat. No. 115, U.S.N.M., two specimens collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. Cat. No. 272111, U.S.N.M., contains another specimen from South Africa.

Family GADINIIDAE.**Genus GADINIA** Gray.**GADINIA COSTATA** Krauss.

Cat. No. 186649, U.S.N.M., two specimens from Port Alfred (Coll. No. 3).

Family AMPHIBOLIDAE.**Genus AMPULLARINA** Sowerby.**AMPULLARINA AFRICANA** Smith.

Cat. No. 186650, U.S.N.M., one specimen from Port Alfred (Coll. No. 4).

Order ORTHODONTA.**Family TEREBRIDAE.****Genus TEREBRA** Bruguiere.**TEREBRA CAPENSIS** Smith.

Cat. No. 186660, U.S.N.M., three specimens from Port Alfred (Coll. No. 15).

TEREBRA SUSPENSa Smith.

Cat. No. 186661, U.S.N.M., contains four specimens from Port Alfred (Coll. No. 16).

TEREBRA DIVERsa Smith.

Cat. No. 18, U.S.N.M., one specimen collected by William Stimpson on the North Pacific Exploring Expedition at False Bay.

TEREBRA APICITINCTA Sowerby?

Cat. No. 187034, U.S.N.M., one worn specimen which appears to belong here, from Port Alfred (Coll. No. 570). Cat. No. 250410, U.S.N.M., contains a fragment from the same place (Coll. No. 1283).

TEREBRA, species?

Cat. No. 250483, U.S.N.M., contains a smooth apex of a very small *Terebra*, from Port Alfred (Coll. No. 1356).

Family CONIDAE.**Genus CONUS** Linnaeus.**CONUS, species?**

Cat. No. 250302, U.S.N.M., contains a worn and bleached specimen of a magnificent cone, having three dark bands; one immediately

beneath the shoulder, one a little posterior to the middle; another the anterior fourth of the whorls, separated by two light bands. The entire surface is marked also by irregular, vertical zigzag markings.

I have been unable to identify this shell with any of the known species, and the specimen is too poor to serve as the type of a new species (Coll. No. 1175).

CONUS ROSACEUS Chemnitz.

Seven lots of this species before us are from Port Alfred. Cat. No. 186665, U.S.N.M., three specimens (Coll. No. 20). Cat. No. 227, U.S.N.M., three specimens (Coll. No. 801). Cat. No. 249, U.S.N.M., two specimens (Coll. No. 917). Cat. No. 249649, U.S.N.M., one specimen (Coll. No. 921). Cat. No. 249651, U.S.N.M., one specimen (Coll. No. 923). Cat. No. 249652, U.S.N.M., three specimens (Coll. No. 924). Cat. No. 250309, U.S.N.M., one specimen (Coll. No. 1182).

In addition to these, the Museum has two lots from the mouth of the Fish River, South Africa. Cat. No. 97983, U.S.N.M., three specimens, and 97984, three specimens. Cat. No. 18799, U.S.N.M., from Port Elizabeth.

CONUS AURORA Sowerby.

Eight lots of this species, all from Port Alfred, are in the collection of the United States National Museum. Cat. No. 249648, two specimens (Coll. No. 920). Cat. No. 249650, two specimens (Coll. No. 921). Cat. No. 249655, two specimens (Coll. No. 927). Cat. No. 249657, one specimen (Coll. No. 929). Cat. No. 250304, one specimen (Coll. No. 1177). Cat. No. 250305, one specimen (Coll. No. 1178). Cat. No. 250306, one specimen (Coll. No. 1179). Cat. No. 250316, one specimen (Coll. No. 1189).

CONUS LAVENDULUS, new species.

Plate 1, fig. 10.

Shell obese, with moderately elevated spire. Summits of whorls separated by well-impressed sutures, moderately rounded. Surface of the body whorl marked by numerous fine, closely spaced, wavy, spiral striations. In addition to these striations, a series of spiral lirations are present on the anterior third of the last whorl, which are a little more closely spaced near the extreme anterior portion. Ground color pale lavender, marbled and variegated with russet brown. Interior of outer lip purple posteriorly, fading to purplish white at the anterior margin.

The type, Cat. No. 186973, U.S.N.M., and one other specimen from Port Alfred (Coll. No. 505). The type has $7\frac{1}{2}$ whorls and a suture: Length, 36.1 mm.; diameter, 21 mm.

The following additional specimens have been examined: Cat. No. 97985, U.S.N.M., 3 specimens from the mouth of Fish River. Six additional lots, all collected by Colonel Turton at Port Alfred, are as follows: 4, Cat. No. 227709, U.S.N.M. (Coll. No. 804). 3, Cat. No. 249644, U.S.N.M. (Coll. No. 916). 2, Cat. No. 249654, U.S.N.M. (Coll. No. 926). 1, Cat. No. 250303, U.S.N.M. (Coll. No. 1176). 1, Cat. No. 250311, U.S.N.M. (Coll. No. 1184). 1, Cat. No. 250313, U.S.N.M. (Coll. No. 1186).

CONUS ALFREDENSIS, new species.

Plate 1, fig. 12.

Shell elongate-ovate, with broadly conic, well-elevated spire. Whorls well rounded at their summit, which is marked by a few feebly incised spiral lines. Sutures well impressed. Posterior half of body whorl smooth, anterior half crossed by oblique, low, rounded, spiral lirations. Lip simple. Columella with a twist a little above its anterior extremity. Color pinkish-white, with irregular blotches, flecks, dots, and streaks of pale ochraceous. Inside of outer lip purplish-white.

The two specimens, Cat. No. 186972, U.S.N.M., from Port Alfred may be considered cotypes. One of these has 7 whorls and measures: Length, 35 mm.; diameter, 16 mm. The other has eight turns and measures: Length, 45 mm.; diameter, 20 mm. (Coll. No. 504). Cat. No. 43144, U.S.N.M. contains three young specimens from the Cape of Good Hope.

CONUS CAFFER Krauss.

Seven lots of this species have been examined, all collected by Colonel Turton at Port Alfred. They are as follows:

2, Cat. No. 186665, U.S.N.M. (Coll. No. 20). 4, Cat. No. 227707, U.S.N.M. (Coll. No. 802). 3, Cat. No. 227708, U.S.N.M. (Coll. No. 803). 3, Cat. No. 249647, U.S.N.M. (Coll. No. 919). 2, Cat. No. 249656, U.S.N.M. (Coll. No. 928). 1, Cat. No. 250310, U.S.N.M. (Coll. No. 1183). 1, Cat. No. 250314, U.S.N.M. (Coll. No. 1187).

In addition to these, I have seen four specimens, Cat. No. 98001, U.S.N.M., from the mouth of Fish River, and 1, Cat. No. 43144a, U.S.N.M., from the Cape of Good Hope.

CONUS GUTTATUS Kiener.

I have seen four lots of this species, all from Port Alfred, as follows: 2, Cat. No. 249646, U.S.N.M. (Coll. No. 918). 1, Cat. No. 249658, U.S.N.M. (Coll. No. 930). 1, Cat. No. 250307, U.S.N.M. (Coll. No. 1180). 1, Cat. No. 250312, U.S.N.M. (Coll. No. 1185).

CONUS PICTUS Reeve.

I have seen five specimens of this species from South Africa, three collected by Colonel Turton at Port Alfred.

1, Cat. No. 186663, U.S.N.M. (Coll. No. 18). 2, Cat. No. 249653, U.S.N.M. (Coll. No. 925). 2, Cat. No. 97986, U.S.N.M. from the mouth of Fish River, South Africa.

CONUS INFRENATUS Reeve.

I have seen seven specimens of this species from South Africa, four of which were collected by Colonel Turton at Port Alfred, as follows: Cat. No. 186662, U.S.N.M., two specimens (Coll. No. 17); Cat. No. 250308, U.S.N.M., one specimen (Coll. No. 1181); Cat. No. 250315, U.S.N.M., one specimen (Coll. No. 1188); Cat. No. 97987, U.S.N.M., three specimens from the mouth of Fish River.

CONUS ALGOËNSIS Sowerby.

Cat. No. 170, U.S.N.M., one specimen collected by William Stimpson, on the North Pacific Exploring Expedition at False Bay. Cat. No. 18516, U.S.N.M., one from the Cape of Good Hope.

CONUS BAIRSTOWI Sowerby.

One specimen, Cat. No. 186664, U.S.N.M., from Port Alfred (Coll. No. 19).

CONUS CROTCHI Reeve.

Cat. No. 130748, U.S.N.M., one specimen bearing the general locality South Africa.

CONUS, species (?).

Cat. No. 186974, U.S.N.M., contains a specimen too badly worn to be specifically determined, from Port Alfred (Coll. No. 506).

Family TURRITIDAE.

Genus CLIONELLA Gray.

CLIONELLA KRAUSSII Smith.

Cat. No. 186666, U.S.N.M., contains two specimens from Port Alfred (Coll. No. 21). Another individual, Cat. No. 21780, U.S.N.M., collected at Algoa Bay, was received from Dunker under the name of *Drillia fucata* Reeve.

CLIONELLA BIPARTITA Smith.

Cat. No. 186667, U.S.N.M., contains two specimens of this species from Port Alfred (Coll. No. 22).

CLIONELLA SUBVENTRICOSA Smith.

Cat. No. 186668, U.S.N.M., two specimens from Port Alfred (Coll. No. 23). Cat. No. 272115, U. S. N. M. another from South Africa.

CLIONELLA CONFUSA Smith.

This species is wonderfully variable in coloration; 10 specimens before me, Cat. No. 252108, U.S.N.M., selected from a lot of 76 specimens, (Coll. No. 1607), from Port Alfred, show the following variations in color. Some have the base white, the tip rose colored, and the intermediate portion brown; the latter may be unicolor, spotted or marbled with brown. Others are rose colored throughout, with mottlings and spottings of brown; some of them even have the narrow white zone at the summit, characterizing *C. rosaria*. Still others are pale lavender with rose colored tips; these again may be variously mottled. Some of them are uniformly rose colored without any additional mottlings, while others are pale yellow. Some have a narrow dark zone at the summit and another dark band on the base.

I have seen two additional lots from Port Alfred, 3, Cat. No. 186669, U.S.N.M. (Coll. No. 24), and Cat. No. 227756, U.S.N.M., six specimens (Coll. No. 851). Cat. No. 90681, U.S.N.M., one from the Cape of Good Hope. Cat. No. 97917b, U.S.N.M., contains two from the same locality. Cat. No. 18797, U.S.N.M., contains a specimen from Port Elizabeth.

CLIONELLA ROSARIA Reeve.

Cat. No. 186669a, U.S.N.M., one specimen from Port Alfred (Coll. No. 24). Cat. No. 227757, U.S.N.M., four specimens from the same locality (Coll. No. 852). Cat. No. 252109, U.S.N.M., 10 specimens from the same place (Coll. No. 1608). In addition to these, I have seen 70 specimens which have been returned to the collector, bearing the same collector's number as the last.

CLIONELLA SYBARITICA, new species.

Plate 7, fig. 8.

Shell elongate-conic. Nuclear whorls decollated. Post-nuclear whorls moderately rounded, constricted at the sinus, which causes the summit of the turns to appear as a cord. The space between the sutures is variously mottled with flesh color and chestnut spots and streaks. The base, beginning at the periphery, is rose colored, a little paler on the columella than the rest. The whorls are marked with strong, protractive, axial ribs, which are about as wide as the spaces that separate them; of these, 14 occur upon the first to sixth whorl, while on the last whorl the number increases to about 20. These ribs are interrupted at the sinus a little distance below the summit, and become decidedly enfeebled on the base, vanishing before they reach the columella. In addition to the axial ribs the surface is marked by numerous strong lines of growth. The spiral sculpture consists of equal and equally spaced spiral striations, which are about as broad as the spaces that separate them; these are best expressed in the

groove of the sinus. The lirae, between the spiral striations and the axial lines of growth, inclose numerous small pits, giving the entire surface between the sutures the appearance of a grating. On the base the lines of growth are less strongly developed and the pitting is less pronounced. Aperture rather short; posterior angle obtuse; the sinus is about as broad as the cord above it at the summit of the whorls. The space between the sinus and the anterior portion of the outer lip forms a claw-like element. Columella strong, its inner edge, like the parietal wall, glazed with a thin callus.

The type and another specimen, Cat. No. 250460, U.S.N.M., come from Port Alfred (Coll. No. 1333). The type has lost the nucleus; the seven whorls remaining measure: Length, 20.5 mm.; diameter, 7 mm.

CLIONELLA NEREIA, new species.

Plate 2, fig. 8.

Shell fusiform, chestnut brown variegated with yellowish brown and white, with the apex and anterior portion of base a little lighter than the rest. Whorls with a low rounded subsutural spiral keel that is about one-fifth the width of the space between the sutures. The keel is bordered anteriorly by a shallow sulcus which is about half as wide as the keel. The remaining portions of the whorls on the spire are marked by low, rounded, protractive, axial ribs, which vary somewhat in strength. Of these, there are 14 upon the third; 16 upon the fourth; 18 upon the fifth; and 16 upon the penultimate turn. In addition to the ribs, the ribbed part of the whorl between the sutures is marked by four, strongly incised, equal and subequally spaced, spiral lines. Summits of the whorls rounded. Sutures well impressed. Posterior half of the base well rounded, marked by several well incised spiral lines; and the weak continuations of the axial ribs. Anterior half produced, ornamented by five moderately strong lirations. Entire surface of spire and base covered by numerous strong incremental lines, which are slightly retractive on the subsutural keel and protractive on the rest of the shell. Aperture irregular; posterior angle acute; sinus deep and narrow, somewhat below the summit; outer lip strongly curved; columella short and slightly curved, glazed with a thin callus which also extends upon the parietal wall.

The type, Cat. No. 205942, U.S.N.M., comes from Port Alfred (Coll. No. 24). It has seven whorls, and measures: Length, 14.0 mm.; diameter, 5.7 mm. Cat. No. 250456, U.S.N.M., three from the same place (Coll. No. 1329). Cat. No. 272116, U.S.N.M., contains two additional specimens from South Africa.

CLIONELLA ELIZABETHAE, new species.

Plate 4, fig. 1.

Shell broadly fusiform. Posterior two-fifths of the whorls between the sutures with a strongly excavated channel; anterior three-fifths

marked by 10-12 prominent, broad, low, rounded, somewhat protractive axial ribs which are truncated posteriorly by the channel, their terminations forming cusps. Intercostal spaces about twice as wide as the ribs. The ribbed portions of the whorls on the spire are covered by five, equal and equally spaced, incised, spiral lines. Summit of the whorls appressed, rendering the sutures ill defined. Base of the last whorl moderately long, marked by the feeble continuations of the axial ribs and on the posterior half by five incised spiral lines equaling those on the spire in strength and spacing and forming a continuous series with them. Anterior portion of base with about seven ill-defined spiral lirations. Aperture narrowly elongate pyriform, sinus shallow immediately below the sutures; outer lip somewhat sinuous; columella strong, slightly sigmoid. The coloration of the type consists of a creamy white ground, which is almost unmarked in the subsutural channel and on the anterior half of the base on the last turn. A few dots of brownish orange appear near the summit between the ribs of the preceding whorls. The ribbed portion of the whorl between the anterior and posterior portion of the base is strongly mottled with brownish orange in the intercostal spaces, less so on the summits of the ribs, while a little posterior to the middle the base is marked by two slender spiral lines of the same color.

The type, Cat. No. 18796, U.S.N.M., has lost the early whorls; the four and one-half remaining measure: Length, 13 mm.; diameter, 7 mm. It comes from Port Elizabeth.

CLIONELLA SEMICOSTATA Klener

Cat. No. 16913, U.S.N.M., one specimen from Cape of Good Hope.

CLIONELLA TURTONI, new species.

Plate 2, fig. 2.

Shell fusiform, covered with thick brownish olive epidermis. (Nuclear whorls decollated.) Post-nuclear whorls flattened excepting the contraction of the anal sulcus, which is a little anterior to the posterior third of the space between the sutures; slightly shouldered at the summit. Subsutural cord well rounded, marked by feeble extensions of the ribs, which have a retractive slant. Anal sulcus a mere constriction. Posterior to the sinus the last whorl is marked by very low, poorly developed, somewhat sinuous protractive axial ribs, each of which bears a weak nodule at the sulcus. In addition to the axial ribs the entire surface of the spire and base is marked by numerous strong lines of growth and spiral striations, the combination of the two giving the surface a finely reticulated appearance. Sutures strongly marked. Periphery of the last whorl well rounded. Base moderately long with a slender fasciole at the insertion of the col-

umella. Aperture irregular; outer lip with a broad moderately deep sinus, anterior portion well curved. Columella somewhat sinuous, covered by a strong callus which extends up on the parietal wall.

The type and one other specimen, Cat. No. 186670, U.S.N.M., come from Port Alfred (Coll. No. 25). The type has lost the nucleus and probably the first post-nuclear turn; the seven remaining measure: Length, 26.5 mm.; diameter, 10.0 mm.

CLIONELLA, species?

Cat. No. 250458, U.S.N.M., contains a young specimen of a large species from Port Alfred, which I am unable to identify with any of the named species (Coll. No. 1331).

CLIONELLA SINUATA Bern.

Cat. No. 194, U.S.N.M., contains three specimens of this species obtained by William Stimpson on the North Pacific Exploring Expedition at Simons Bay.

CLIONELLA BORNII Smith.

Cat. No. 186994, U.S.N.M., three specimens from Port Alfred (Coll. No. 526), and Cat. No. 97917a, U.S.N.M., one specimen from Cape of Good Hope.

CLIONELLA? PLATYSTOMA Smkh.

Cat. No. 186671, U.S.N.M., three specimens from Port Alfred (Coll. No. 26) and Cat. No. 186999, U.S.N.M. (Coll. No. 531) from the same locality.

CLIONELLA, species?

Cat. No. 187000, U.S.N.M., contains the tip of a large shell which we are unable to refer to any of the species listed from South Africa. (Coll. No. 532).

CLIONELLA, species?

Cat. No. 186996, U.S.N.M., three specimens from Port Alfred, which I am unable to refer to any of the species listed from South Africa. They are too poor to be properly diagnosed (Coll. No. 528).

Genus *TURRIS* Humphrey.

TURRIS FULTONI Sowerby.

Cat. No. 186672, U.S.N.M., one specimen from Port Alfred (Coll. No. 28). Cat. No. 249735, U.S.N.M., contains another specimen from the same locality (Coll. No. 1007).

Genus *CLAVATULA* Lamarck.

CLAVATULA TAXUS Kiener.

Cat. No. 186991, U.S.N.M., one specimen from Port Alfred (Coll. No. 533).

CLAVATULA HALIFLEX, new species.

Plate 2, fig. 3.

Shell robust, fusiform. Whorls sloping from the summit and the periphery to a depressed line midway between the sutures. The portion posterior to the median line is smooth excepting the strongly retractive lines of growth and spiral striations. The portion anterior to it is marked by distant, low, broad, feebly developed axial ribs, which appear as nodules above the sulcus. On this part the incremental lines are decidedly protractive. Sutures well marked. Posterior portion of base well rounded, anterior part produced rendering the left outline of the whorl concave, marked by feeble extensions of the ribs which disappear shortly after passing over the periphery. Entire surface of spire and base marked by very fine, closely spaced wavy spiral striations. Aperture of irregular outline; posterior angle acute; sinus moderately deep, in the middle between the periphery and summit; columella stout, somewhat sinuous and twisted, covered by a thin callus, which also extends over the parietal wall. Color uniformly cream yellow. In some of the young specimens the space between the sulcus and summit and tip of base are white, the rest light brown.

The type and one other individual, Cat. No. 186992, U.S.N.M., come from Port Alfred (Coll. No. 524). The type has lost its early whorls, the seven remaining measure: Length, 29.5 mm.; diameter, 11.8 mm. Cat. No. 186997, U.S.N.M., contains three young individuals from the same locality (Coll. No. 529).

CLAVATULA HALISTREPTA, new species.

Plate 2, fig. 5.

Shell fusiform. Whorls marked by a narrow, obscurely nodulous spiral keel at the summit, which is followed by a depressed spiral sulcus that equals the keel in width, the two comprising the posterior two-fifths of the whorls between the sutures. Anterior three-fifths marked by strong, broad, low, rounded, slightly protractive axial ribs, which are strongest at their junction with the sulcus, beyond which they scarcely extend. The type has lost the early whorls; upon the first of those remaining there are 10 and upon the rest, 12 ribs. Intercoastal spaces about one-half as wide as the ribs. On account of the closely appressed summits, the sutures are poorly defined. Base of the last whorl moderately long, marked by the continuations of the ribs, which gradually weaken in strength as they pass forward. Entire surface of the spire and base marked by lines of growth and numerous, closely crowded, fine, wavy, spiral striations. Posterior angle of aperture acute, sinus below the keel at the summit; columella sigmoid, covered by a thin callus which also extends over

DRILLIA CAFFRA Smith.

Cat. No. 186674, U.S.N.M., four specimens from Port Alfred (Coll. No. 30).

DRILLIA SIGNA, new species.

Plate 7, fig. 4.

Shell broadly conic. Nuclear whorls rose colored, the later portion of the shell horn yellow, with a broad chestnut band, which extends from the periphery anteriorly, over one-third of the base, gradually paling to fuse with the ground color. Whorls moderately rounded, strongly, tabulatedly shouldered at the summit. The portion between the angle near the summit and the periphery is crossed by low, broad axial ribs, of which 14 occur upon the fourth and fifth and 16 upon the last whorl. On the base of the last whorl these ribs gradually become evanescent. In addition to the axial ribs, the whorls are marked by lines of growth and numerous fine, closely spaced spiral striations, which are about as wide as the spaces that separate them. These spiral striations occur equally strong at the shoulder of the summit and on the base. Aperture moderately large; posterior angle decidedly obtuse; sinus very shallow, forming the angle at the shoulder; outer lip thin, showing the external color markings within; inner edge of the columella and parietal wall glazed with a thin callus.

The type, Cat. No. 250457, U.S.N.M., comes from Port Alfred (Coll. No. 1330). It has seven whorls and measures: Length, 14 mm.; diameter, 6.2 mm.

DRILLIA LAYARDI Sowerby.

Cat. No. 186675, U.S.N.M., three specimens from Port Alfred (Coll. No. 31). Cat. No. 272113, U.S.N.M., two from South Africa.

DRILLIA DIVERSA Smith.

Cat. No. 186676, U.S.N.M., three specimens from Port Alfred (Coll. No. 32).

DRILLIA BAIRSTOWI Sowerby.

Cat. No. 186677, U.S.N.M., four specimens from Port Alfred (Coll. No. 33). Two additional specimens, Cat. No. 249732, U.S.N.M., come from the same place (Coll. No. 1004).

DRILLIA HOTTENTOTA Smith.

Cat. No. 186678, U.S.N.M., seven specimens from Port Alfred (Coll. No. 34). Also Cat. No. 187007, U.S.N.M., two young individuals from the same locality (Coll. No. 540) and Cat. No. 187008, U.S.N.M., another immature shell from the same place (Coll. No. 541). Cat. No. 272117, U.S.N.M., one from South Africa.

DRILLIA ALBONODULOSA Smith.

Cat. No. 186679, U.S.N.M., two specimens from Port Alfred (Coll. No. 35).

DRILLIA THETIS Smith.

Cat. No. 186680, U.S.N.M., four specimens from Port Alfred (Coll. No. 36). Cat. No. 249733, U.S.N.M., contains another specimen from the same locality (Coll. No. 1005).

DRILLIA NIVOSA Smith.

Cat. No. 186681, U.S.N.M., five specimens from Port Alfred (Coll. No. 37). Cat. No. 249731, U.S.N.M., contains two additional specimens from the same locality (Coll. No. 1003).

DRILLIA SUBCONTRACTA Smith.

Cat. No. 186282, U.S.N.M., five specimens from Port Alfred (Coll. No. 38). Cat. No. 272114, U.S.N.M., one from South Africa.

DRILLIA PRAETERMISSA Smith.

Cat. No. 186683, U.S.N.M., four specimens from Port Alfred (Coll. No. 39). Cat. No. 187002, U.S.N.M., two specimens from the same source (Coll. No. 534). Cat. No. 227762, U.S.N.M., two specimens from the same locality (Coll. No. 857).

DRILLIA LARA, new species.

Plate 2, fig. 4.

Shell fusiform, orange yellow; shoulder a little lighter colored than the rest of the turns. Posterior third of the whorls between the sutures marked by a concave sulcus, which is crossed by fine retractive lines of growth and many, very fine, closely spaced, wavy, spiral striations. Anterior two-thirds of the whorls between the sutures marked by low, rounded, decidedly protractive, axial ribs, which are truncated posteriorly at the anterior margin of the sulcus; anteriorly they pass feebly over the periphery and part of the base. There are 12 of these ribs upon all but the penultimate turn; the latter has 14. The ribbed portion of the whorl on the spire is marked by about 20 equal and equally spaced spiral striations. Intercostal spaces almost as wide as the ribs. Summits of the whorls appressed. Sutures ill defined. Base of the last whorl gently rounded posteriorly, the somewhat produced extremity giving the left outline a slightly concave appearance in the middle. The posterior portion of the base is spirally striated like the space immediately posterior to it. Anteriorly the base is marked by slender spiral lirations, which are strongest at the basal extremity. Aperture of irregular outline; outer lip deeply channeled at the posterior angle, very strongly curved in the middle, the edge of which is infolded; columella moderately long, stout, covered by a slight callus which extends up over the parietal wall, in the posterior part of which it becomes somewhat thickened.

The type, Cat. No. 187001, U.S.N.M., and another specimen come from Port Alfred (Coll. No. 533). The type has seven whorls and measures: Length, 13.6 mm.; diameter, 5.8 mm. Cat. No. 272118 U.S.N.M., one from Port Elizabeth, South Africa.

DRILLIA HALIDOMA, new species.

Plate 2, fig. 9.

Shell robust, rufous orange. Whorls with a narrow, obscurely nodulous keel immediately below the summit, followed by a sulcus that is a little wider than the keel, the two almost equaling the width of the spaces between the sutures. Anterior half of the whorl between the sutures inflated, of much greater diameter than the rest of the whorls, marked by very broad, low, rounded, slightly protractive, axial ribs, which terminate posteriorly in rounded knobs, while anteriorly they extend feebly over the periphery and part of the base. There are 12 of these ribs on the early whorls and 14 upon the penultimate. Posterior part of base well rounded, anterior part produced, which renders the left outline of the base concave. Entire surface of spire and base marked by incremental lines and fine, wavy, spiral striations on the subsutural keel and sulcus. The ribbed parts of the spire and base are marked by slender raised lirations, of which 7 appear between the sutures and 8 on the base, the latter becoming successively narrower from the periphery to the extremity of the base. Aperture irregularly ovate; posterior angle acute, sinus deep, somewhat below the summit; outer lip decidedly curved; columella moderately long, slightly sigmoid, covered by a thin callus, which extends upon the parietal wall.

The type, Cat. No. 90678, U.S.N.M., comes from the Cape of Good Hope. It has lost the early whorls; the 6 remaining measures: Length, 18.6 mm.; diameter, 9.6 mm.

DRILLIA, species?

Cat. No. 97917, U.S.N.M., a young individual from Cape of Good Hope, which can not be referred to any of the forms listed from South Africa.

Genus *MANGILIA* (Leach) Risso.

MANGILIA CAPENSIS Smith.

Cat. No. 186684, U.S.N.M., three species from Port Alfred (Coll. No. 40). Cat. No. 272119, U.S.N.M., two from South Africa.

MANGILIA DINA, new species.

Plate 2, fig. 1.

Shell milk white. Nuclear whorls $2\frac{1}{2}$, dextral, forming a low apex, the first small and smooth, the second much larger, marked by very slender riblets and fine spiral lirations which increase in strength

with the growth of the whorls. Post-nuclear whorls very strongly shouldered at about one third of the distance between the sutures anterior to the summit, marked by strong, somewhat protractive axial ribs, of which 12 occur upon all but the penultimate turn; upon this there are 14. Intercostal spaces about three times as wide as the ribs. In addition to the axial sculpture the whorls are marked by spiral lirations which are of two strengths. Four of the stronger cross the whorls between the periphery and the shoulder; of these one is immediately above the suture and one at the angle of the shoulder, the other two divide the space between them into three unequal areas. The space between the peripheral and second strong liration is crossed by four slender subequal spiral threads; that between the second and third also by four, that between the third and fourth by five, of which the middle one is a little stronger than the rest. The space between the shoulder and the summit of the whorls is marked by about 20 slender, equal and equally spaced, spiral threads. Sutures strongly marked. Periphery of the last whorl well rounded. Base attenuated, marked by strong and fine lirations like the spire, those on the columellar portion being stronger than the rest. There are twelve strong threads having a somewhat variable number of finer threads between them. The entire surface of spire and base is also marked by fine lines of growth which give a pitted appearance to the spaces between the fine spiral lines in the intercostal spaces. All the spirals cross the axial ribs and the coarser ones render their junctions with the ribs slightly nodulose. Aperture of irregular shape; outer lip scythe-shaped, the border of the deep-rounded notch which is immediately below the summit representing the handle, the flattened surface of the strongly in-bent outer lip forming the blade; the surface of the latter is finely, spirally striated; columellar wall covered by a thin callus which extends upon the parietal wall.

The type, Cat. No. 186686a, U.S.N.M., comes from Port Alfred (Coll. No. 42). It has seven whorls, and measures: Length, 6.0 mm.; diameter, 2.4 mm.

MANGILIA VERRUCOSA Sowerby.

Cat. No. 227758, U.S.N.M., two specimens from Port Alfred (Coll. No. 853).

MANGILIA GISNA, new species.

Plate 7, fig. 3.

Shell small, golden brown. Nuclear whorls one and a half, smooth, forming a rather elevated apex. Post-nuclear whorls, well rounded, shouldered at the summit, marked by strong spiral cords, of which 3 occur upon the first two whorls between the sutures, and 4 upon the penultimate. The base of the last whorl is marked by eight addi-

tional cords, which equal those between the sutures in strength and have about the same spacing. The spaces between these spiral cords are about as wide as the cords. In addition to the spiral cords, the whorls are marked by slender axial ribs, which are slightly protractive. Of these ribs, 12 occur upon the first, 16 upon the second and 28 upon the last turn. The junctions of the axial ribs with the spiral cords form slender tubercles, while the spaces enclosed between them appear as well rounded, strongly impressed pits. On the anterior half of the base, the axial riblets become much enfeebled, so that here the pitting is less apparent. Sutures strongly constricted; aperture moderately large, decidedly channeled posteriorly and anteriorly; outer lip thin, showing the external sculpture within. The inner edge of the columella and the parietal wall is covered with a thin callus.

The type and two specimens of this species, Cat. No. 249730, U.S.N.M., come from Port Alfred (Coll. No. 1002). The type has four postnuclear whorls and measures: Length, 3.1 mm.; diameter, 1.4 mm.

MANGILIA CONSANGUINEA Sowerby.

Cat. No. 249747, U.S.N.M., contains one specimen from Port Alfred (Coll. No. 1019). This species was described by Sowerby as *Columbella consanguinea*, but we believe that it belongs to *Mangilia*.

MANGILIA NISGA, new species.

Plate 7, fig. 1.

Shell small, yellowish white. Nuclear whorls small, one and a half, smooth, forming a very small, well-rounded, white apex. Post-nuclear whorls with a very strong sloping shoulder, which is bounded anteriorly by a strong tuberculated spiral cord. In addition to this cord, the whorls are marked by three additional cords, which decrease in strength successively from the strong cord at the shoulder, to the suture. The space between the strong shoulder and the summit of the shell is marked by a strong spiral thread. Base of the last whorl marked by a peripheral cord, about as strong as the one adjacent to it posteriorly and two others as strong as this, having the same spacing as those on the spire. The columella is provided with four cords, of which the fourth, which marks the anterior limit of the columella, is as strong as the first, while the two intermediate ones are less strongly developed. In addition to the spiral sculpture, the whorls are marked with rounded, low, quite regularly spaced, axial ribs, of which 10 occur upon the first and second, and 14 upon the last turn. These ribs render the spiral cords tuberculated at their junction with them. In addition to these strong axial ribs, the entire surface of the shell, between the sutures and the anterior half of the

base, is marked by numerous, quite regular, closely spaced, axial threads, which are best shown in the spaces between the spiral cord and on the tabulated summit of the whorls. Aperture rather large scarcely channeled posteriorly; outer lip very thick, rendered denticulate on the outside by the spiral cords; inner lip and parietal wall glazed with a thin callus.

The type, Cat. No. 250463, U.S.N.M., comes from Port Alfred (Coll. No. 1336). It has four post-nuclear whorls and measures Length, 3.1 mm.; diameter, 1.5 mm.

MANGILIA HELGA, new species.

Plate 7, fig. 2.

Shell wax yellow. Nuclear whorls one and a half, well rounded, apparently smooth. Post-nuclear whorls strongly, tabulatedly shouldered, marked by strong, spiral cords, of which 3 occur between the angle of the shoulder and the suture on all the whorls; these are a little wider than the spaces that separate them. On the middle of the tabulated shoulder, a slender spiral cord begins on the first whorl, which increases in strength until it is about half as strong as those anterior to it on the last turn. Sutures strongly constricted. Periphery of the last whorl marked by a cord fully as strong as those posterior to it. Base moderately prolonged, slightly rounded, marked by three spiral cords which are almost as strong as those on the spire and of about equal spacing with them. Aperture feebly channeled posteriorly, decidedly so anteriorly; outer lip rendered sinuous by the spiral cords; inner lip and parietal wall covered with a thin callus.

The type, Cat. No. 250470, U.S.N.M., comes from Port Alfred (Coll. No. 1343). It has three and a half post-nuclear whorls and measures: Length, 3 mm.; diameter, 1.1 mm.

MANGILIA BENJAMINI, new species.

Plate 7, fig. 5.

Shell elongate-conic, flesh colored. Nuclear whorls, more than one, smooth. Post-nuclear whorls strongly rounded; the sinus falling at the summit where the whorls are somewhat contracted; surface of the post-nuclear whorls marked with strong, rounded, protracted axial ribs, which begin practically anterior to the sinus and extend strongly to the periphery; they are scarcely defined anterior to this on the last whorl. Of these ribs 10 occur upon the first to fourth, 12 upon the fifth to seventh, and 14 upon the penultimate turn. The axial ribs are about as wide as the spaces that separate them. In addition to these axial ribs the whorls are marked by numerous slender spiral threads, of which about 5 occur in the area of the sinus on the last three turns. These are finer than those which cover

the rest of the turn between the sutures; of the latter 3 occur upon the first to third, 4 upon the fourth, 7 upon the fifth and sixth, 11 upon the next, and 13 on the last turn. The spaces between the spiral threads about equal the spiral threads in strength. The surface between the spiral threads is covered with fine granulations on the spire. The last whorl anterior to the periphery is marked by 27 spiral cords, which are about equal and equally spaced, being only a trifle stronger on the columella. Sutures well constricted; aperture with a strong deep sinus at its posterior angle, which renders the outer lip, anterior to this, decidedly claw-like; outer lip strongly reenforced within by a callus which bears about 15 denticulations on the inner surface. Columella and parietal wall glazed with a thin callus.

The type, Cat. No. 210, U.S.N.M., was collected by William Stimpson on the North Pacific Exploring Expedition at False Bay. It has nine post-nuclear whorls and measures: Length, 15.3 mm.; diameter, 5.7 mm. The specimen was labeled *Clathurella gracilis* Montagu. It differs from this in being uniformly smaller and having ever so many more spiral cords. Named for Dr. Marcus Benjamin of the United States National Museum.

MANGILIA? CRASSILIRATA Smith.

Cat. No. 187006, U.S.N.M., one specimen from Port Alfred (Coll. No. 538). Cat. No. 250459, U.S.N.M., contains another specimen from the same place (Coll. No. 1332).

MANGILIA ARATA, new species.

Plate 3, fig. 8.

Shell vinaceous cinnamon. Nuclear whorls two, dextral, smooth, well rounded. Post-nuclear whorls with the posterior third between the sutures forming sloping shoulders, the rest well rounded, ornamented by strong, rounded, almost vertical, axial ribs, which are about one-half as wide as the intercostal spaces. Ten of these ribs occur upon the first and second, 12 upon the third, and 14 upon the penultimate turn. In addition to the ribs the whorls are marked by strongly raised, narrow, spiral bands, of which, four, equally strong and equally spaced, divide the space between the suture and the shoulder and three, that between the shoulder and the summit; of these, two are close together, immediately posterior to the shoulder, while the third divides the space between them and the summit. Sutures somewhat constricted. Periphery of the last whorl well rounded. Posterior half of base well rounded and marked by the continuations of the axial ribs. Anterior half produced. Entire base crossed by 20 raised spiral bands, the posterior of which equals those on the spire, while those on the anterior extremity appear as rounded lirations. Aperture of irregular outline, channel strong and deep, separated from the parietal wall

by a thick callus; outer lip very strong, coming to a sharp edge strongly incurved in the middle; columella sinuous and twisted, strong, covered by a thin callus which extends up on the parietal wall.

The type, Cat. No. 168, U.S.N.M., was collected by William Stimpson at Simons Bay on the North Pacific Exploring Expedition. It has five post-nuclear whorls and measures: Length, 6.7 mm.; diameter, 3.0 mm.

MANGILIA EUCOSMIA, new species.

Plate 2, fig. 7.

Shell elongate-conic, slender, white with narrow brown bands. Nuclear whorls $2\frac{1}{2}$, dextral, strongly rounded, smooth, forming an elevated spire. Post-nuclear whorls with a strong shoulder one-third of the distance between the sutures anterior to the summit, the rest well rounded, marked by strong, narrow, sinuous, slightly protractive, axial ribs, of which 10 occur upon the first, 12 upon the second and third, 14 upon the fourth and fifth, and 16 upon the penultimate turn. Intercoastal spaces about three times as wide as the ribs. The spiral sculpture consists of moderately broad, low, flattened spiral lirations, separated by channels a little less in width than the lirations. These lirations grow gradually wider from the summit to the periphery. There are 14 of them between the sutures on the penultimate turn. Base attenuated, marked by the continuations of the axial ribs and about 14 spiral lirations, those of the outer half where the ribs are absent being much stronger than the rest. Aperture almost oval, decidedly expanded at the posterior angle, where the outer lip is somewhat reflected by the shallow channel. Middle of the outer lip slightly inbent, thin; columella sinuous and somewhat twisted, covered by a thin callus which extends up on the parietal wall.

The type has nine whorls and measures: Length, 12.4 mm.; diameter, 4 mm. It and three other specimens, Cat. No. 187004, U.S.N.M. are from Port Alfred (Coll. No. 536). Cat. No. 187005, U.S.N.M. contains two specimens from the same locality (Coll. No. 537).

In some of the specimens, the spiral lirations show a tendency to split.

MANGILIA HERILDA, new species.

Plate 7, fig. 7.

Shell small, white. Nucleus consisting of at least one whorl, which appears to be smooth. (In our specimens this is somewhat worn.) Post-nuclear whorls, well rounded, separated by a well impressed suture, marked by strong, low, rounded, retractive axial ribs, which are not quite as broad as the spaces that separate them. Of these ribs, about 12 occur upon all the whorls. These ribs disappear shortly after passing over the periphery of the base. In addition

to the axial ribs, the surface of the shell is marked by numerous, fine lines of growth. The spiral sculpture consists of well-developed cords, which are about half as wide as the spaces that separate them. Of these cords, 4 occur between the sutures on the first turn, 5 upon the second, 6 upon the third and 7 upon the penultimate whorl. Base marked by about 15 spiral cords, which equal those on the spire in strength and spacing. Aperture moderately large; posterior angle obtuse, scarcely channeled; outer lip thin, rendered slightly sinuous by the spiral cords on the outside; columella and parietal wall covered with a thin callus.

The type and another specimen, Cat. No. 249734, U.S.N.M., come from Port Alfred (Coll. No. 1006). The type has five postnuclear whorls and measures: Length, 7.4 mm.; diameter, 3.1 mm.

MANGILIA, species?

Cat. No. 250454, U.S.N.M., contains a young specimen from Port Alfred, which we are unable to identify positively (Coll. No. 1327).

MANGILIA GRAYI Reeve.

Cat. No. 186686, U.S.N.M., five specimens from Port Alfred (Coll. No. 42). Cat. No. 250468, U.S.N.M., one from the same place (Coll. No. 1341).

MANGILIA NYMPHA, new species.

Plate 3, fig. 4.

Shell very small and slender, semitransparent, light yellow with the posterior third between the sutures bright chestnut brown on the later whorls, while the early ones are white. Nuclear whorls dextral, $1\frac{1}{2}$, helicoid, closely coiled, smooth and polished. Post-nuclear whorls well rounded with appressed summits, ornamented with protractive, well rounded, axial ribs, of which 12 occur upon the first, 14 upon the second, 16 upon the third, and 20 upon the last turn. Intercostal spaces a little wider than the ribs, crossed by equal and equally spaced spiral bars which pass up on the sides of the ribs but do not cross them; of these, seven appear between the sutures. Sutures well impressed. Periphery of the last whorl rounded. Base attenuated, marked by the feeble continuations of the axial ribs and spiral lirations which become dominant on the anterior portion where the ribs disappear, and these form continuous, raised, spiral threads. There are seven spiral threads on the base. Outer lip fractured, very thin, showing the external sculpture within; columella strongly sigmoid, covered by a thin callus which extends up on the parietal wall.

The type, Cat. No. 187009, U.S.N.M., comes from Port Alfred (Coll. No. 542). It has four post-nuclear whorls and measures: Length, 3.9 mm.; diameter, 1.5 mm. Cat. No. 250462, U.S.N.M., contains another specimen from the same locality (Coll. No. 1335).

MANGILIA, species 1

Cat. No. 250472, U.S.N.M., contains two young shells of a slender *Mangilia* from Port Alfred, the nuclear whorls of which are very minutely, spirally striated; the succeeding turns provided with slender ribs and incised, spiral lines (Coll. No. 1345).

MANGILIA, species?

Cat. No. 19371, U.S.N.M., contains a worn specimen of a species different from any of the known species. It bears the label South Africa. It is too poor to be properly diagnosed.

MANGILIA AMPLEXA Gould.

Plate 2, fig. 10, plate 7, fig. 6.

Clathurella amplexa GOULD, Proc. Bost. Soc. Nat. Hist., vol. 7, p. 338, 1860.

Shell elongate-conic, white or cream-yellow. Nuclear whorls two and one-half, well rounded, smooth. Postnuclear whorls strongly rounded, provided with decidedly sinuous, strong, protractively slanting, almost sublamellar, axial ribs, of which 14 occur upon the first three and 12 upon the remaining whorls. These ribs are about one-third as wide as the spaces which separate them. In addition to the ribs, the whorls are marked by narrow, deeply incised, spiral sulci, which are about one-third as wide as the flat spaces that separate them. The increase in these sulci from the early whorls to the later takes place by the intercalation of new sulci in the flat spaces, which usually begin as fine incised striations. Of these sulci 6 occur upon the first, 10 upon the second, 17 upon the third, 14 upon the fourth, and 19 upon the penultimate whorl. Periphery of the last whorl well rounded. Base protracted, marked by the strong continuations of the axial ribs, which become evanescent at the insertion of the columella, and 23 incised spiral sulci, which are a little more distantly spaced on the columella than on the posterior half of the base. Aperture decidedly channeled anteriorly, posteriorly with a strong notch immediately below the suture. The type Cat. No. 217 U.S.N.M., comes from Simons Bay. It has five post-nuclear whorls and measures: Length, 8 mm.; diameter, 2.5 mm. Another specimen, Cat. No. 187003, U.S.N.M., comes from Port Alfred (Coll. No. 535).

MANGILIA HUMEROSA, new species.

Plate 2, fig. 6.

Shell slender, semitransparent, white, with a slender band of bright rufous a little posterior to the periphery of each whorl and sometimes a second line of the same color immediately below the summit of the whorls. (Nuclear whorls decollated.) Postnuclear whorls rather high between the sutures, slightly shouldered a little

below the appressed summit, otherwise well rounded, marked by strong, narrow, somewhat sinuous, almost vertical axial ribs, of which 12 occur upon all the turns. Intercoastal spaces almost three times as wide as the ribs, crossed by 18 equal and almost equally spaced, strongly incised, spiral lines between the sutures. Periphery of the last whorl well rounded. Base attenuated, marked by the continuations of the axial ribs on the posterior half, and about 12 incised spirals, which equal those of the spire in strength and spacing. Aperture irregular, outer lip slightly reflected at the posterior angle to form a shallow notch, the rest decidedly inbent; columella somewhat sigmoid, covered by a thin callus which extends up on the apical wall.

The type and one other specimen, Cat. No. 186688, U.S.N.M., were collected at Port Alfred (Coll. No. 46). It has lost the first nuclear whorl, the six remaining measure: Length, 6.6 mm.; diameter, 1.2 mm.

MANGILIA PONSONBYI Sowerby.

Cat. No. 186685, U.S.N.M., three specimens from Port Alfred (Coll. No. 41).

MANGILIA, *species?*

Cat. No. 250468, U.S.N.M., contains a young specimen from Port Alfred, which appears to be different from any of the species recorded from South Africa, but is too poor to serve as a basis for description (Coll. No. 1341).

MANGILIA SIREN Smith.

Cat. No. 186691, U.S.N.M., contains a specimen from Port Alfred (Coll. No. 50). This was described as *Glyphostoma siren* Smith, but I believe it should range with *Mangilia*.

Genus CYTHARA Schumacher.

CYTHARA ALFREDENSIS Smith.

The United States National Museum has five lots of this species from Port Alfred. They are: Cat. No. 186689, eight specimens (Coll. No. 47). Cat. No. 227759, six specimens (Coll. No. 854). Cat. No. 227760, six specimens (Coll. No. 855). Cat. No. 252110, five specimens (Coll. No. 1603); and Cat. No. 252111, five specimens (Coll. No. 1604).

In addition to these, I have seen 44 of (Coll. No. 1603) and 45 of (Coll. No. 1604), which have been returned to Col. Turton.

CYTHARA IMA, *new species*.

Plate 3, fig. 1.

Shell white. Nuclear whorls two, smooth. Postnuclear whorls moderately rounded, with closely appressed summits marked by weak, depressed, rather broad, slightly protractive axial ribs, of

which 10 occur upon the first three whorls, 12 upon the fourth and penultimate. One of the ribs is decidedly thicker, forming a strong varix. This feature is common to all of our specimens. Intercoastal spaces about twice as wide as the ribs and very shallow. In addition to the axial sculpture the entire surface of spire and base is marked by equal and almost equally spaced, closely placed, wavy, incised, spiral lines, of which about 24 occur between the sutures on the penultimate turn and about 30 upon the base of the last whorl. Sutures ill-defined. Aperture with the posterior angle acute; outer lip thick within, sharp at edge, sinus scarcely indicated a little distance anterior to the summit; columella almost straight, covered by a thin callus, which extends up on the parietal wall, forming a tubercle near the posterior angle.

The type, Cat. No. 117, U.S.N.M., was collected by William Stimpson on the North Pacific Exploring Expedition at Simon Bay. It has eight whorls and measures: Length, 8.1 mm.; diameter, 3.5 mm. Cat. No. 186687, U.S.N.M., contains three additional specimens from Port Alfred (Coll. No. 45).

Genus *DAPHNELLA* Hinds.

DAPHNELLA ? *SULCATA* Sowerby.

Cat. No. 186690, U.S.N.M., one specimen from Port Alfred (Coll. No. 48).

DAPHNELLA ALFREDENSIS, new species.

Plate 8, fig. 3.

Shell spindle shaped, milk white, semitranslucent. Nuclear whorls decollated; post-nuclear whorls well rounded, appressed at the summit, marked by moderately strong, protractively curved, sinuous, axial ribs, of which 12 occur upon the first, 14 upon the second and third, and 18 upon the penultimate turn. These ribs are about as wide as the spaces which separate them. Intercoastal spaces shallow, crossed by slender, equal and equally spaced, spiral threads, of which 6 occur upon the first, 7 upon the second, 12 upon the third, and 15 upon the last turn between the sutures. The appressed portion of the whorls appears to be free from spiral sculpture. Sutures feebly marked; periphery of the last whorl well rounded; base rather long; the posterior half well rounded and the anterior half somewhat concaved, marked by the feeble continuations of the axial ribs and spiral threads which equal those of the spire in strength and spacing. Aperture oval, strongly channeled anteriorly, posterior angle acute; outer lip thin, showing the external sculpture within, inner lip almost evenly concaved; parietal wall glazed with a thin callus.

The type, Cat. No. 227753, U.S.N.M., comes from Port Alfred (Coll. No. 48). It has five post-nuclear whorls, and measures: Length 5.6 mm., diameter, 4.5 mm.

Genus *DONOVANIA* Bucquoy, Dautzenberg, and Dollfus.

DONOVANIA STIMPSONI, new species.

Plate 3, fig. 3.

Shell brown. (Nuclear whorls decollated.) Post-nuclear whorls well rounded with appressed summits. Axial sculpture reduced to mere feeble indication of axial ribs. Spirally the whorls are marked by equal and almost equally spaced, incised lines, of which six occur between the sutures of the second and third, seven upon the fourth and the penultimate turn. Upon the base, which is but slightly attenuated, there are 10 incised spirals, those on the anterior extremity being a little closer spaced than the rest. Sutures well impressed. Aperture with the posterior angle acute; outer lip thin, sinus scarcely indicated a little distance below the summit; columella short, straight, covered by a thin callus which extends up on the parietal wall.

The type, Cat. No. 132, U.S.N.M., was collected by William Stimpson on the North Pacific Exploring Expedition at False Bay. It has six whorls and measures: Length, 5.4 mm.; diameter, 2.1 mm.

Family CANCELLARIIDAE.

Genus *CANCELLARIA* Lamarck.

CANCELLARIA FOVEOLATA Sowerby.

Cat. No. 98016, U.S.N.M., one specimen from Peddie Coast, South Africa. Cat. No. 186701, U.S.N.M., three specimens from Port Alfred (Coll. No. 60).

CANCELLARIA SEMIDISJUNCTA Sowerby.

Cat. No. 186700, U.S.N.M., two specimens from Port Alfred (Coll. No. 59).

This was described by Sowerby¹ as having been obtained by Cumming from sandy mud at a depth of 25 fathoms at Cagayan, Mindanao, Philippine Islands.

The figures given correspond so well with the specimen above listed, and the fact that we did not secure this species in the Philippines during the *Albatross* expedition, makes me wonder if the above citation of locality may not be erroneous.

CANCELLARIA DALLI, new species.

Plate 4, fig. 2.

Shell irregularly oval, horn-yellow variegated with rusty spots. (Nuclear whorls decollated.) Post-nuclear whorls inflated, strongly rounded with broad tabulated summits, marked by numerous, slender,

¹ Proc. Zool. Soc. London, p. 137, 1848.

threadlike, retractive, axial riblets and spiral lirations. The spiral lirations are of varying strength. The strongest is at the angle of the shoulder and its junction with the axial riblets forms a series of sharp tubercles. Two other spirals, one at the periphery and another a little posterior to the middle between the angulated shoulder and the periphery, are of equal strength, and form weak tubercles at their juncture with the riblets. The flat summits of the whorls are marked by nine fine lirations, while the space between the angle and the strong supramedian liration is marked by one moderately strong thread followed by a weak one, which is succeeded by a stronger one and three slender threads. The space between the tuberculated median and peripheral cords is marked by three moderately strong lirations, which in turn are separated by finer raised threads. Periphery rendered slightly angulated by the cord. Base of the last whorl with a deep, moderately broad umbilicus, the space between the umbilical margin and the periphery well rounded, marked by six equal and equally spaced lirations which equal the median one of the spire in strength. These lirations, like those of the spire, are separated by finer ones, two of which usually occur in the space between them. Umbilicus marked by strong lines of growth and slender, crowded, equally developed, raised spiral threads. Aperture angulated pear-shaped; outer lip angular; columella strongly reflected, almost straight, provided with two strong oblique folds.

The type, Cat. No. 17074, U.S.N.M., has five post-nuclear whorls and measures: Length, 18 mm.; diameter, 13.4 mm.; greatest length of aperture, 11 mm.; greatest diameter of aperture, 8 mm.; width of shoulder immediately behind the aperture, 2 mm. The type comes from the Cape of Good Hope.

Family OLIVIDAE.

Genus EBURNA Lamarck.

EBURNA PAPILLARIS Sowerby.

Cat. No. 227773, U.S.N.M., one specimen from Port Alfred (Coll. No. 868).

Genus ANCILLA Lamarck.

ANCILLA OBTUSA Swainson.

Cat. No. 227771, U.S.N.M., one specimen from Port Alfred (Coll. No. 800).

ANCILLA DECIPIENS Sowerby.

Cat. No. 163022, U.S.N.M., contains one specimen from Kowie, obtained from Sowerby and Fulton.

ANCILLA REEVEI Smith.

Cat. No. 180702, U.S.N.M., six specimens from Port Alfred (Coll. No. 851).

ANCILLA ALBOZONATA Smith.

- o. 186706, U.S.N.M., four specimens from Port Alfred (Coll.

ANCILLA OBESA Sowerby.

- o. 98017, U.S.N.M., contains four specimens from Kowie,
No. 186703, U.S.N.M., six specimens from Port Alfred
(63).

ANCILLA FASCIATA Reeve.

- lots of this species are in the collection of the United States
Museum, all from Port Alfred. They are: Cat. No. 186704,
specimens (Coll. No. 64). Cat. No. 249741, four specimens (Coll.
No. 1014). Cat. No. 249742, three specimens (Coll. No. 1014).
249743, two specimens (Coll. No. 1015).

ANCILLA MARMORATA Reeve.

- o. 186707, U.S.N.M., one specimen from Port Alfred (Coll.

ANCILLA PURA Sowerby.

- o. 187016, U.S.N.M., one specimen from Port Alfred (Coll.

ANCILLA BULLOIDES Reeve.

- o. 187015, U.S.N.M., four specimens from Port Alfred (Coll.

ANCILLA OSCULATA Sowerby.

- o. 187014, U.S.N.M., four specimens from Port Alfred (Coll.

ANCILLA, species?

- o. 250441, U.S.N.M., contains an exceedingly young speci-
men from Port Alfred (Coll. No. 1314).

Genus *SYLVANOCOCHLEA* Sowerby.*SYLVANOCOCHLEA ANCILLA* Sowerby.

- o. 227772, U.S.N.M., one specimen from Port Alfred (Coll.

SYLVANOCOCHLEA, species?

- o. 250440, U.S.N.M., contains a badly worn specimen of this
genus from Port Alfred, which is much broader and less elevated
than the foregoing species; (Coll. No. 1313).

Family *MARGINELLIDAE*.Genus *MARGINELLA* Lamarck.*MARGINELLA PYRUM* Gronovius.

- lots of this species all from Port Alfred, are in the collection
of the United States National Museum. Cat. No. 186980, three
specimens (Coll. No. 512). Cat. No. 186983, two specimens (Coll.
No. 938). ; and two specimens, Cat. No. 249666 (Coll. No. 938).

MARGINELLA ROSEA Lamarck.

Cat. No. 140, U.S.N.M., two specimens from the Cape of Good Hope. Cat. No. 17296, U.S.N.M., two more from the same locality. Cat. No. 186984, U.S.N.M., two from Port Alfred (Coll. No. 516).

MARGINELLA MOSAICA Sowerby.

Cat. No. 124681, U.S.N.M., one specimen from Cape of Good Hope. Cat. No. 186709, U.S.N.M., two from Port Alfred (Coll. No. 168).

MARGINELLA ORNATA Redfield.

Cat. No. 186708, U.S.N.M., one specimen from Port Alfred (Coll. No. 67).

MARGINELLA, species?

Cat. No. 250329, U.S.N.M., one poor specimen from Port Alfred (Coll. No. 1202).

MARGINELLA LINEOLATA Sowerby.

Cat. No. 186981, U.S.N.M., three specimens from Port Alfred (Coll. No. 513). One, Cat. No. 186982, U.S.N.M., from the same locality (Coll. No. 514).

MARGINELLA PIPERITA Hinds.

Cat. No. 124671, U.S.N.M., two specimens from Cape of Good Hope. Cat. No. 186710, U.S.N.M., four from Port Alfred (Coll. No. 69). Cat. No. 272145, U.S.N.M., three specimens from Port Elizabeth.

MARGINELLA ALBOCINCTA Sowerby.

Four lots of this species are in the collection of the United States National Museum, all from Port Alfred. One, Cat. No. 186712 (Coll. No. 71). Two, Cat. No. 249667 (Coll. No. 939). Two, Cat. No. 250323 (Coll. No. 1196). One, Cat. No. 250328 (Coll. No. 1201). Cat. No. 272147, U.S.N.M., four specimens from Port Elizabeth.

MARGINELLA BAIRSTOWI Sowerby.

Cat. No. 186711, U.S.N.M., four from Port Alfred (Coll. No. 70).

MARGINELLA PUNCTILINEATA Smith.

Three lots of this species are in the collection of the United States National Museum, all from Port Alfred. Three specimens, Cat. No. 186713 (Coll. No. 72). Two, Cat. No. 249669 (Coll. No. 941), and one, Cat. No. 250327 (Coll. No. 1200).

MARGINELLA KEENII Marris.

Cat. No. 186716, U.S.N.M., two from Port Alfred (Coll. No. 75).

MARGINELLA EUCOSMIA, new species.

Plate 1, fig. 11.

Shell of medium size, marbled, excepting a broad whitish band which extends over almost half the space between the shoulder and the base. Whorls appressed at the summit, forming a very slightly curved spire. Body of the last whorl very slightly convex. Outer lip very much thickened at the edge, shouldered at the summit, very slightly contracted in the middle, white or faintly spirally streaked in front, decidedly so behind; columella provided with a strong callus and four folds, the anterior two of which are much more oblique than the rest; the first one is the weakest, and forms the basal margin of the columella.

The type, Cat. No. 186986, U.S.N.M., comes from Port Alfred (Coll. No. 518); it has $4\frac{1}{2}$ whorls and measures: Length, 12.5 mm.; diameter, 6 mm.

Two additional lots, from Port Alfred, are in the collection of the United States National Museum. One, Cat. No. 186987, U.S.N.M., four specimens (Coll. No. 519), and Cat. No. 186985, U.S.N.M., three specimens (Coll. No. 517).

MARGINELLA, species?

Cat. No. 186986a, U.S.N.M., contains a specimen about the size of *M. eucosmia*, but a little stouter, with fine brown spiral lines upon a white background. The specimen is too worn to permit of proper diagnosis. It comes from Port Alfred (Coll. No. 518).

MARGINELLA COSMIA, new species.

Plate 21, fig. 2.

Shell of medium size, polished, marked only by fine lines of growth. Spire moderately elevated; whorls slightly angulated at the periphery. Summits of succeeding turns creeping up on the preceding whorl, to which they are appressed. Nuclear whorls light yellow, succeeding turns flesh color, marked with many irregular, wavy, axial bands of brown, which are preceded by a shadow of a much lighter tint. Aperture wide; posterior angle very obtuse; outer lip very much thickened, clouded with many oval spots of ashy gray, the long axis of which is spirally disposed; columella smoky white, provided with four almost equally strong oblique folds; parietal wall covered by a moderately thick callus.

The type and two specimens, Cat. No. 249668, U.S.N.M., come from Port Alfred (Coll. No. 940). The type measures: Length, 11.7 mm.; diameter, 6.8 mm. Cat. No. 186988, U.S.N.M., contains two more from the same locality (Coll. No. 520).

MARGINELLA, species?

A young specimen, Cat. No. 250326, U.S.N.M., from Port Alfred (Coll. No. 1199), of a more or less uniform pearl gray ground color, with an interrupted band of spots on the middle and spotting on the spire, which we are unable to arrange with any of the described forms.

MARGINELLA MUNDA Smith.

Cat. No. 186726, U.S.N.M., two from Port Alfred (Coll. No. 85).

MARGINELLA ZONATA Kienner.

There are three color phases in the material before us, typical *zonata* with the broad belt of brownish orange of which Cat. No. 186715, U.S.N.M., contains three specimens from Port Alfred (Coll. No. 74) and Cat. No. 227710, eight specimens from the same locality (Coll. No. 805). We have also seen 92 specimens of this in Colonel Turton's collection (Coll. No. 1600), from the same place. Then, a form in which the markings are reversed—namely, a white belt with the tip and base brownish orange. Of this, Cat. No. 186715a, U.S.N.M., contains three specimens from Port Alfred (Coll. No. 74) and Cat. No. 227712, eight specimens from the same locality (Coll. No. 807). Of this, I have also seen 66 specimens in Colonel Turton's collection (Coll. No. 1602). Lastly, a phase in which the brownish orange is restricted to a very narrow subsutural band. Of this, Cat. No. 186724, U.S.N.M., contains three specimens from Port Alfred (Coll. No. 83), and Cat. No. 227711, U.S.N.M., eight specimens from the same source (Coll. No. 806). Ninety-three more were examined Colonel Turton's collection from the same place (Coll. No. 1601).

MARGINELLA BILINEATA Krauss.

Cat. No. 127, U.S.N.M., one specimen collected by William Stimpson at Simons Bay on the North Pacific Exploring Expedition. Cat. No. 186989, U.S.N.M., three from Port Alfred (Coll. No. 521).

MARGINELLA CAPENSIS Krauss.

Cat. No. 149, U.S.N.M., five specimens collected by William Stimpson at Simons Bay, on the North Pacific Exploring Expedition. Cat. No. 17305, U.S.N.M., three specimens from Cape of Good Hope. Cat. No. 31661, U.S.N.M., four from the same locality. Cat. No. 272146, U.S.N.M., five specimens from the Cape of Good Hope.

MARGINELLA PUELLA Gould.

Plate 1, fig. 1.

Marginella puella GOULD, Proc. Bost. Soc. Nat. Hist., vol. 7, p. 385, 1860.

Shell yellowish-white, polished, spire moderately elevated, broad conic. Left outline evenly rounded. Inner lip well rounded, slightly concaved at the region of the folds, of which there are four, which

appear equal and equally spaced, the anterior one forming the anterior limit of the columella. Outer lip slightly pinched in and drawn forward a little posterior to the middle. Aperture increasing steadily in width from the posterior angle anteriorly.

The type, Cat. No. 149, U.S.N.M., collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay, measures: Length, 10 mm.; diameter, 4.6 mm.

MARGINELLA NEGLECTA Sowerby.

Plate 1, fig. 7.

Four lots of this species are in the collection of the United States National Museum. Cat. No. 24100*b*, one specimen from Simons Bay, Cape of Good Hope. Three additional lots are in the United States National Museum, from Port Alfred. One, Cat. No. 250333 (Coll. No. 1206). Two specimens, Cat. No. 250332 (Coll. No. 1205), and one specimen, Cat. No. 186714*a* (Coll. No. 73).

MARGINELLA TURTONI, new species.

Plate 1, fig. 3.

Shell vitreous, translucent, pale yellow with a narrow, pale orange brown band forming a girdle about the middle of the shell. Spire completely covered by the posterior edge of the outer lip, which forms the highest point in all the turns. Left margin of the last whorl slightly rounded in the middle, tapering gently toward the base, rounding abruptly toward the summit. Right margin straight in the middle, curving a little more gently toward the spire than the base. Aperture narrow, extending to the middle of the spire; outer lip moderately strong, slightly inbent in the middle; parietal wall glazed with a thin callus, provided with four, equal and equally sloping, oblique folds on the columella, the anterior of which coincides with the basal margin of the columella.

The type and three specimens, Cat. No. 186718, U.S.N.M., come from Port Alfred (Coll. No. 77). The type measures: Length, 8.5 mm.; diameter, 4.0 mm.

MARGINELLA CLEO, new species.

Plate 1, fig. 6.

Shell elongate-ovate, semitranslucent, vitreous, bluish white. Spire short, broadly conic, whorls not separated by distinct sutures. Left margin of the shell gently rounded; aperture narrow; outer lip inbent in the middle; parietal wall covered by a thin callus; columella provided with four oblique folds, of which the anterior, which bounds the basal edge, is the strongest.

The type, Cat. No. 127a, U.S.N.M., has four whorls and measures: Length, 6.8 mm., diameter, 3.5 mm. It was collected by William Stimpson on the North Pacific Exploring Expedition in Simons Bay.

This may be the shell that has been listed as *Marginella bulbosa* Reeve, from South Africa. *M. bulbosa* Reeve is an inflated form with less elevated spire and comes from Borneo. Cat. No. 17307, U.S.N.M., comes from Cape of Good Hope. Three additional lots, all from Port Alfred, are in the collection of the United States National Museum. Two, Cat. No. 249670 (Coll. No. 942). One, Cat. No. 250331 (Coll. No. 1204), and one, Cat. No. 250324 (Coll. No. 1197).

MARGINELLA CYLINDRICA Sowerby.

Cat. No. 186721, U.S.N.M., one specimen from Port Alfred (Coll. No. 80). Cat. No. 250325, U.S.N.M., one specimen from the same locality (Coll. No. 1198).

MARGINELLA FALLAX Smith.

Cat. No. 186723, U.S.N.M., three specimens from Port Alfred (Coll. No. 82).

MARGINELLA LEPTA, new species.

Plate 21, fig. 3.

Shell elongate-oval, semitransparent, white. Spire short, broadly conic. Suture well impressed. Surface polished, marked only by exceedingly fine lines of growth. Aperture gradually increasing in width from the posterior angle anteriorly; outer lip thin, not denticulated. Columella curved, with a moderately thick callus which is provided with six oblique folds, the second of which is the strongest, the first follows in succession of strength and borders the anterior edge of the columella; the four remaining decrease in size and spacing from the third to sixth.

Two specimens of this species, Cat. No. 249673, U.S.N.M., come from Port Alfred. (Coll. No. 945.) One of these, the type, measures: Length, 5.1 mm.; diameter, 2.6 mm.

MARGINELLA DULCIS Smith.

Cat. No. 186725, U.S.N.M., five specimens from Port Alfred (Coll. No. 84).

MARGINELLA BURNUPI Sowerby.

Cat. No. 186719, U.S.N.M., three specimens from Port Alfred (Coll. No. 78). Cat. No. 249671, U.S.N.M., contains another specimen from the same place (Coll. No. 943).

MARGINELLA DIFFERENS Smith.

Cat. No. 249672, U.S.N.M., three specimens from Port Alfred

MARGINELLA, species?

Cat. No. 250321, U.S.N.M., contains a young white individual, of moderate size, broad outline, and quadruplicate columella, which we are unable to refer to any of the known species. Port Alfred (Coll. No. 1194).

MARGINELLA ALFREDENSIS, new species.

Plate 1, fig. 2; plate 10, fig. 4.

Shell elongate-ovate, bluish white, semitranslucent. The whorls are so arranged as to overlap partly at the summit, which gives the summit a broadly, evenly rounded aspect. The left margin of the shell is well rounded. The outer lip is flattened in the middle, curving gently toward the summit above this, and a little more abruptly basally. Aperture narrow, lunate, a little wider basally than anteriorly; outer lip thickened at the edge; inner lip appressed to the body whorl, with a thin callus, the basal portion of which terminates in a slender fasciole. The inner lip is armed with eight subequally spaced folds which diminish in size from the first, which equals the basal fasciole in strength, to the last.

The type and three specimens of this species, Cat. No. 186727, U.S.N.M., come from Port Alfred (Coll. No. 86). The type has four and one-half whorls and measures: Length, 2.5 mm.; diameter, 1.7 mm. Eight additional lots of this species, all from Port Alfred, are in the collection of the United States National Museum. Cat. No. 186990, six specimens (Coll. No. 522); Cat. No. 250338, three specimens (Coll. No. 1211); Cat. No. 250340, one specimen (Coll. No. 1213); Cat. No. 250341, 11 specimens (Coll. No. 1214); Cat. No. 250339, one specimen (Coll. No. 1212); Cat. No. 250337, one specimen (Coll. No. 1210); Cat. No. 250344, one specimen (Coll. No. 1217); Cat. No. 250342, 12 specimens (Coll. No. 1215).

MARGINELLA ALGOENSIS Smth.

Five lots of this species are in the collection of the United States National Museum, all from Port Alfred. Cat. No. 186722, four specimens (Coll. No. 81). Cat. No. 249665, three specimens (Coll. No. 937); Cat. No. 249664, six specimens (Coll. No. 936); Cat. No. 250335, two specimens (Coll. No. 1208); Cat. No. 250336, one specimen (Coll. No. 1209).

MARGINELLA ALMO, new species.

Plate 21, fig. 1.

Shell ovate, semitranslucent, milk white. Spire short, broadly, roundedly conic. Suture slightly impressed. Surface marked with exceedingly fine lines of growth only. Aperture very long, widening somewhat anteriorly; outer lip thickened at the edge and very finely denticulated on the inner margin, the denticulations extending

inward as fine lirations; columella reenforced with a strong callus, which is provided with oblique folds; of these, the first, which is a little weaker than the next, marks the anterior border; the second is stronger than all the rest; the nine succeeding folds are progressively weaker and become closer spaced from the second fold posteriorly.

Two specimens of this species, Cat. No. 249672, U.S.N.M., come from Port Alfred (Coll. No. 944). One of these, the type, measures: Length, 5.4 mm.; diameter, 3.2 mm.

MARGINELLA ZEYHERI Krauss.

Four lots of this species are in the collection of the United States National Museum; three of these came from Port Alfred. Cat. No. 186717, six specimens (Coll. No. 76); Cat. No. 186714, two specimens (Coll. No. 73); Cat. No. 250334, three specimens (Coll. No. 1207); Cat. No. 102727, one specimen from the Cape of Good Hope.

MARGINELLA, species?

Cat. No. 250343, U.S.N.M., contains two young specimens of *Marginella*, from Port Alfred (Coll. No. 1216). They are too young to be positively determined.

Cat. No. 250330, U.S.N.M., contains one young specimen of *Marginella*, too young to be properly placed, from Port Alfred (Coll. No. 1203).

Cat. No. 250480, U.S.N.M., contains a young *Marginella* from Port Alfred, also too young to be properly placed (Coll. No. 1353).

Family VOLUTIDAE.

Genus VOLUTA Linnaeus

VOLUTA AFRICANA Reeve.

Cat. No. 186728, U.S.N.M., one from Port Alfred (Coll. No. 87).

VOLUTA (CALLIPARA) BULLATA Swainson.

Cat. No. 249663, U.S.N.M., contains a badly worn specimen of this species from Port Alfred (Coll. No. 935).

Family TURBINELLIDAE.

Genus XANCUS Bolten.

XANCUS GLOBULUS Chemnitz.

Cat. No. 124677, U.S.N.M., one from Cape of Good Hope.

XANCUS TRUNCATUS Sewerby.

Cat. No. 186979, U.S.N.M., a young specimen from Port Alfred (Coll. No. 511).

Family MITRIDAE.

Genus MITRA Martyn.

MITRA BATHYRAPHE Sewerby.

Cat. No. 186736, U.S.N.M., from Port Alfred (Coll. No. 95).

MITRA CANALICULATA Sewerby.

No. 186734, U.S.N.M., three, from Port Alfred (Coll. No. 93).

No. 272158, U.S.N.M., two from Kowie, South Africa.

MITRA CAPENSIS Dunker.

No. 186733, U.S.N.M., five, from Port Alfred (Coll. No. 92).

No. 272159, U.S.N.M., two from Kowie, South Africa.

MITRA HELENA, new species.

Small, wax-yellow, with two bands of white, the first of which is a little more than the anterior half between the sutures, the second one, which is about half as wide, occupies the middle base. Nuclear whorls decollated. Postnuclear whorls decollated at the summit, marked by very strong, slightly retractive, axial cords, of which 16 occur upon the first of the remaining turns, 20 on the second, and 16 upon the rest. In addition to the axial ribs, the axial cords are crossed by strong spiral cords, of which five occur upon the sutures of the first three and seven upon the fourth and fifth. The spaces inclosed between the axial ribs and spiral cords are narrow on the posterior half and deep slits on the anterior half between the sutures. Base rendered decidedly sigmoid on the left by the twisting of the anterior portion; marked by the continuation of the axial ribs which extend to the tip of the columella, and by the spiral cords, of which the 6 posterior to the columella are like the spire, while the first 2 on the columella are broader and more rounded, the last two on the anterior end weaker. Aperture well impressed. Aperture narrow, channeled anteriorly; angle acute; outer lip marked by 12, slender, spiral lirae; columella provided with four oblique folds, which degenerate in size from the posterior to the anterior; they also are more oblique in the same order.

Type and another specimen, Cat. No. 272156, U.S.N.M., come from South Africa. The type has 6 whorls remaining and measures: height, 15 mm.; diameter, 6.6 mm. These specimens came to the United States National Museum, labelled "*Mitra daedala*, Reeve," in a collection by Mr. John B. Henderson, in a collection purchased from him at Cape Town and Fulton. *Mitra daedala* of Reeve is a Philippine species, and we have from the islands; it is much larger than the present

MITRA IMA, new species.

Plate 21, fig. 4.

Shell small, cylindro-conic, pale brown, variegated with whitish spots and spots of rust color. Nuclear whorls decollated, the succeeding turns well rounded, slightly shouldered at the summit, crossed by obsolete axial ribs, of which 12 occur upon the first to third and 14 upon the penultimate whorl. Sutures well marked. Periphery of the last whorl well rounded. Base prolonged, well rounded, free of all sculpture. Aperture channeled anteriorly; posterior angle acute; outer lip moderately thick; columella provided with four oblique folds, of which the posterior is the strongest, the others decreasing in size consecutively; parietal wall covered with a moderately thick callus. The color markings consist of a light brown ground color, each whorl of the spire being marked with two interrupted bands of white, the first of which is on the middle of the whorl, and the second immediately posterior to the suture. The white areas are on the middle of the ribs and each white area is bounded on all sides with a rust-colored edging in the middle subsutural band. This rust color is absent at the posterior margin, while the ground color of the whole base is made up of this tint. The base, in addition, is marked with four interrupted bands of unequal width and unequal spacing of whitish spots.

The type, Cat. No. 250346, U.S.N.M., comes from Port Alfred (Coll. No. 1219). It has four postnuclear whorls, and measures: Length, 9 mm.; diameter, 4 mm.

MITRA EUZONATA Sowerby.

Cat. No. 186735, U.S.N.M., two specimens from Port Alfred (Coll. No. 94).

MITRA KOWIENSIS Sowerby.

Cat. No. 186737, U.S.N.M., five specimens from Port Alfred (Coll. No. 96).

Cat. No. 272155, U.S.N.M., two from Kowie, South Africa.

MITRA LATRUNCULARIA Reeve.

Cat. No. 98011, U.S.N.M., six specimens from Albany, South Africa.
Cat. No. 186730, U.S.N.M., one from Port Alfred (Coll. No. 89).

MITRA CARIFA, new species.

Shell rather large, elongate-ovate, brown, excepting two spiral cords that form the anterior half of the whorls between the sutures, which are yellow. Nuclear whorls decollated. Postnuclear whorls narrowly, roundly shouldered at the summit, the rest marked by four strong, broad, flattened, spiral cords between the sutures, which

re marked by spiral lirations. The axial sculpture consists of attractive threads, which are best developed in the grooves between the spiral cords. Suture slightly channeled. Periphery axially differentiated. Base rather long, marked by 18 low, rounded, spiral cords, which become more distantly spaced, elevated, and narrower anteriorly. These cords are crossed by axial spiral lirations. The axial threads are continued on the varix is apparent a little behind the aperture. Aperture white, narrowly ovate, channeled anteriorly, posterior angle outer lip reflected, provided with 14 strong denticles; inner lip developed, reflected over the base with the edge free; prothorax five strong, oblique folds and three weaker ones between anterior four. These weaker folds join the posterior strong fold at their outer edge. The strong folds decrease in strength axially from the posterior anteriorly. Parietal wall glazed by a film.

Type and another specimen, Cat. No. 272154, U.S.N.M., came to the United States National Museum in a donation from Mr. John E. Sowerby, in a collection purchased by him from Sowerby and labelled: "*Mitra limbifera* Lamarck, from South Africa," pages of this paper were going through press. I am therefore able to include a figure of it. It differs from *limbifera* by being much more strongly sculptured than that species, also in the shape of the columellar plaits. The type has eight whorls, and height, 29.4 mm.; diameter, 12.4 mm.

MITRA MERULA Sowerby.

No. 186732, U.S.N.M., four specimens from Port Alfred (Coll.

MITRA SIMPLEX Reeve.

No. 31901, U.S.N.M., one specimen from Cape of Good Hope.

No. 13925, U.S.N.M., another from the same place. Cat. No. 13925, U.S.N.M., five from Albany, South Africa.

No. 272157, U.S.N.M., an additional specimen from South Africa.

MITRA, species?

No. 250345, U.S.N.M., contains two badly worn specimens of a small sized, short, stout, brown species, from Port Alfred, which are unable to refer to any of the known species (Coll. No. 1218).

MITRA PATULA Reeve.

No. 186731, U.S.N.M., eight specimens from Port Alfred (Coll.

MITRA PICTA Reeve.

No. 186729, U.S.N.M., three specimens from Port Alfred (Coll.

Cat. No. 186975, U.S.N.M., two from Port Alfred (Coll.

No. Cat. No. 272153, two from South Africa.

MITRA, species?

Cat. No. 18252, U.S.N.M., three shells too young to be positively determined, from South Africa.

Genus MITROMORPHA A. Adams.

MITROMORPHA VOLVA Sowerby.

Cat. No. 186692, U.S.N.M., three specimens from Port Alfred (Coll. No. 51). Cat. No. 272152, U.S.N.M., an additional specimen from South Africa.

Family FASCIOLARIIDAE.

Genus FASCIOLARIA Lamarck.

FASCIOLARIA HEYNEMANNI Dunker.

Cat. No. 186738, U.S.N.M., one specimen from Port Alfred (Coll. No. 97).

FASCIOLARIA ALFREDENSIS, new species.

Plate 4, fig. 3, 3a, 3b.

Shell of medium size, fusiform, externally light brown, internally bluish-white. Nuclear whorls decollated. Post-nuclear whorl marked by a strongly tuberculated median ridge between the suture. Tubercles, 11 on each whorl, narrow and elongated, having the long axis parallel with the spiral sculpture. The space between the tuberculated ridge and the summit is concave and is marked by many slender raised threads, while that between the insertion of the columella and the tuberculated ridge is marked by about 10 depressed, unequally broad, spiral bands, which, like the spaces between them, are very finely, spirally lirate; rostrum spirally lirate. The axial sculpture consists of rather coarse incremental lines. Aperture spoon-shaped; posterior angle acute; columella triplicate; anterior fold very strong and acute; spiral cord on the parietal wall slender.

The type, Cat. No. 187026, U.S.N.M., comes from Port Alfred (Coll. No. 562). It has lost the early whorls, the $5\frac{1}{2}$ remaining measure: Length, 133 mm.; diameter, 55 mm.

FASCIOLARIA, species?

Two specimens from Port Alfred, too poor to be specifically determined, and listed as Cat. No. 187027, U.S.N.M. (Coll. No. 563) and Cat. No. 250438, U.S.N.M. (Coll. No. 1311).

Genus LATIRUS Montfort.

LATIRUS ROUSI Sowerby.

Cat. No. 186739, U.S.N.M., one specimen from Port Alfred (Coll. No. 98).

LATIRUS BAIRSTOWI Sowerby.

Cat. No. 186740, U.S.N.M., one specimen from Port Alfred (Coll. No. 99).

Family FUSIDAE.

Genus FUSINUS Rafinesque.

FUSINUS OCELLIFERUS Bern.

Cat. No. 98014, U.S.N.M., two specimens from Albany; Cat. No. 186741, U.S.N.M., one from Port Alfred (Coll. No. 100).

FUSINUS CINGULATUS Smth.

Cat. No. 186742, U.S.N.M., two specimens from Port Alfred (Coll. No. 101).

FUSINUS RUBROLINEATUS Sowerby.

Cat. No. 163018 U.S.N.M., one specimen from 90 fathoms, off Cape St. Blaize.

Family BUCCINIDAE.

Genus COMINELLA Gray.

COMINELLA TIGRINA Kiener.

Cat. No. 16990, U.S.N.M., two specimens collected by Archer at Cape of Good Hope. Cat. No. 186745, U.S.N.M., three from Port Alfred (Coll. No. 104). Cat. No. 272134, U.S.N.M., three from the Cape of Good Hope.

COMINELLA RISERIALIS Kuster.

Cat. No. 36726, U.S.N.M., six from Cape of Good Hope. Cat. No. 43053, U.S.N.M., two from the same locality.

COMINELLA PORCATA Gmelin.

Cat. No. 90, U.S.N.M., one collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. Cat. No. 179, U.S.N.M., one from the same source. Cat. No. 36729, U.S.N.M., one from Cape of Good Hope. Cat. No. 87127, U.S.N.M., two from Cape of Good Hope collected by W. Legrande. Cat. No. 186746, U.S.N.M., one from Port Alfred (Coll. No. 105).

COMINELLA PORCATA MULTILIRATA, new subspecies.

Plate 4, fig. 6.

Shell a little more robust than typical *porcata* in outline, marked by numerous closely spaced spiral threads. Inside of outer lip evenly, closely, finely lirate.

The type, Cat. No. 16986, U.S.N.M., comes from Cape of Good Hope and measures: Length, 47.5 mm.; diameter, 28.3 mm.

COMINELLA ANGLICANA Martyn.

Cat. No. 90*b*, U.S.N.M., one collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. Cat. No. 36727, U.S.N.M., one from Cape of Good Hope.

COMINELLA PAPYRACEA Bruguiere.

Cat. No. 16989, U.S.N.M., seven collected by Hugh Cuming at Cape of Good Hope. Cat. No. 130898, U.S.N.M., one from South Africa without specific locality. Cat. No. 250451, U.S.N.M., two young specimens from Port Alfred (Coll. No. 1324).

COMINELLA LIMBOSA Reeve.

Cat. No. 90*a*, U.S.N.M., two collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. Cat. No. 98000*a*, U.S.N.M., four collected by Archer at Cape of Good Hope. Cat. No. 98000*a*, U.S.N.M., four from the Albany coast. Cat. No. 125326, U.S.N.M., one collected on the Eclipse Expedition, 1889-90, at Cape Town. Cat. No. 272136, U.S.N.M., two from the Cape of Good Hope.

COMINELLA LAGENARIA Lamarck.

Cat. No. 90, U.S.N.M., two collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. Cat. No. 16990*a*, U.S.N.M., two collected by Captain Archer at Cape of Good Hope. Cat. No. 36728, U.S.N.M., six from Cape of Good Hope. Cat. No. 43063, U.S.N.M., eight young shells from Cape of Good Hope. Cat. No. 75929, U.S.N.M., one from Algoa Bay. Cat. No. 98000, U.S.N.M., one from the Albany coast. Cat. No. 186744, U.S.N.M., one from Port Alfred (Coll. No. 103).

COMINELLA DELALANDI Kiener.

Cat. No. 92*a*, U.S.N.M., one collected by Captain Archer at Cape of Good Hope. Cat. No. 89125, U.S.N.M., three specimens from Cape of Good Hope. Cat. No. 89126, U.S.N.M., two from the same place. Cat. 98025, U.S.N.M., six from the Albany coast.

COMINELLA ELONGATA Dunker.

Cat. No. 186747, U.S.N.M., 10 from Port Alfred (Coll. No. 106). Cat. No. 272138, U.S.N.M., one from Algoa Bay.

COMINELLA ALFREDENSIS, new species.

Plate 3, fig. 7.

Shell fusiform, flesh-colored, variously mottled and dashed with brown. Nuclear whorls decollated. Post-nuclear whorls having a sloping shoulder which extends over the posterior three-fifths of the whorls between the sutures, marked by weak axial ribs, which are best developed at the anterior edge of the shoulder and extend but feebly across it; anteriorly the ribs become much enfeebled

13 ribs occur upon the last and 14 upon the preceding turn. The spiral sculpture consists of 10 irregularly developed, low, broad cords, of which the three on the shoulder are almost obsolete and scarcely discernible; while the four upon the base are fairly strong. In addition to these cords the entire surface is marked by fine more or less regularly developed, punctate, spiral striations. Posterior angle of aperture acute, outer lip provided with nine slender denticles a little within its inner margin; columella glazed with a moderately strong callus; parietal lamellae only slightly developed.

The type and two specimens, Cat. No. 187019, U.S.N.M., were collected at Port Alfred (Coll. No. 554). The type has lost the early whorls; the last four remaining measure: Length, 29.2 mm.; diameter, 15 mm.

COMINELLA CAPENSIS Dunker.

Cat. No. 184, U.S.N.M., three specimens collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay.

COMINELLA UNIFASCIATA Sowerby.

Cat. No. 186748, U.S.N.M., four specimens from Port Alfred (Coll. No. 107).

COMINELLA PUNCTURATA Sowerby.

Cat. No. 19375, U.S.N.M., three specimens from Cape of Good Hope. Cat. No. 43074, U.S.N.M., two more from the same locality. Cat. No. 186749, U.S.N.M., five from Port Alfred (Coll. No. 108). Cat. No. 127769, U.S.N.M., six specimens from the same locality (Coll. No. 864). Cat. No. 227770, U.S.N.M., six specimens from the same source (Coll. No. 865).

COMINELLA ANGUSTA Sowerby.

Cat. No. 186751, U.S.N.M., two from Port Alfred (Coll. No. 110).

COMINELLA, species?

Cat. No. 16992, U.S.N.M., four specimens too poor to be specifically determined from the Cape of Good Hope.

COMINELLA, species?

Cat. No. 18807, U.S.N.M., three specimens from Port Elizabeth which are too poor to be specifically determined.

COMINELLA, species?

Cat. No. 187021, U.S.N.M., two specimens from Port Alfred, too poor to permit of specific determination. Cat. No. 249745, U.S.N.M., contains three specimens from the same source (Coll. No. 1017).

Genus *TRITONIDEA* Swainson.

TRITONIDEA INSCULPTA Sowerby.

Cat. No. 186752, U.S.N.M., three specimens from Port Alfred (Coll. No. 111).

Genus *EUTHRIA* Gray.

EUTHRIA FORSONBYI Sowerby.

No. 187018, U.S.N.M., two specimens from Port Alfred (Coll. No. 109).

EUTHRIA FUSCOTINCTA Sowerby.

No. 186753, U.S.N.M., four specimens from Port Alfred (Coll. No. 109).

EUTHRIA TURTONI, new species.

Plate 3, fig. 6.

Shells fusiform, varying in ground color from lavender to orange or light brown. The shoulder usually is dark brown, while the rest is finely dotted with the same color. Extreme apex of nucleus decollated, the first turn remaining is depressed and smooth. Postnuclear whorls appressed at the summit, strongly, slopingly shouldered. The shoulder, occupying the posterior half of the space between the sutures, marked by about fifteen unequally developed and unequally spaced, coarse, spiral striations. Anterior half of whorls between the sutures ornamented with feebly expressed, low, broad riblets, which are most distinct at the anterior edge of the shoulder, where they appear as nodules. Of these, 17 occur upon the last turn. Rostrum slender, for half of base finely, evenly, spirally lirate, the lirations becoming more distinct at the insertion of the columella. Posterior angle of columella sigmoid.

No. 187020, U.S.N.M., came from Port Alfred (Coll. No. 109). Six whorls, and measures: Length, 25 mm.; diameter,

No. 186750, U.S.N.M., contains three additional specimens from same locality. Coll. No. 109.

Family COLUBRARIIDAE.

Genus *COLUBRARIA* Schumacher.

COLUBRARIA ALFREDENSIS, new species.

Plate 4, fig. 5.

Shells white, banded and lined with rust brown. A series of narrow streaks extend from the summit down on the whorls. The streaks are about one-half as wide as the spaces separating them. A spiral line of interrupted nodules covers the anterior half between the sutures, and extends to the middle of the base. In addition to these there are others less strongly defined, all of varying degrees of distinctness. Nuclear whorls decollated. Postnuclear whorls slightly rounded, appressed at the summit and slightly decollated at the sutures, marked by low, poorly defined, and irregu-

arly placed varices and many, very regular, and regularly, closely spaced, slender, raised, axial threads which are about as wide as the spaces that separate them. Spirally the whorls are marked by about 6 slender threads, between the sutures, which are a little less strong than the axial markings and also less regular. The spaces enclosed between the axial and spiral threads appear as narrow oblong pits whose long diameter coincides with the spiral sculpture. Sutures well impressed. Periphery of the last whorl well rounded. Base prolonged, marked like the spire but not as strongly. Aperture strongly channeled anteriorly, posterior angle narrow, obtuse; outer lip thickened by a varix, columella sinuous, covered by a strong, decidedly reflected callus which extends up on the parietal wall.

The type and one other specimen, Cat. No. 187017, U.S.N.M., came from Port Alfred (Coll. No. 551). The type has the last six whorls which measure: Length, 33.5 mm.; diameter, 11.5 mm.

Family ALECTRIONIDAE.

Genus ALECTRION Montfort.

ALECTRION CAPENSIS Dunker.

The United States National Museum has ten lots of this species, Cat. No. 18164, five specimens from Cape of Good Hope, Cat. No. 21756, one collected by Dunker at Algoa Bay. Cat. No. 43022, nine specimens from Cape of Good Hope. Cat. No. 77793, nine from the same locality collected by Layard. Cat. No. 90609, two from Cape of Good Hope. Cat. No. 91459, six from the same place. Cat. No. 98013, twelve from Albany. Cat. No. 186755, three from Port Alfred (Coll. No. 116). Cat. No. 186759, one from the same place (Coll. No. 120). Cat. No. 187196, one from the same locality (Coll. No. 65). Cat. No. 272121 U.S.N.M., two specimens from South Africa.

ALECTRION CRAWFORDI Sowerby.

Cat. No. 186754, U.S.N.M., two from Port Alfred (Coll. No. 115).

ALECTRION KOCHIANA Dunker.

Cat. No. 21757, U.S.N.M., one specimen collected by Dunker in Algoa Bay. Cat. No. 227764, U.S.N.M., five specimens from Port Alfred (Coll. No. 859), and Cat. No. 227765, U.S.N.M., two specimens from the same locality (Coll. No. 860), and Cat. No. 250453, U.S.N.M., two from the same place (Coll. No. 1326).

ALECTRION QUANTULA Gould.

Gould's type, Cat. No. 224, U.S.N.M., collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay, agrees in every way with *Nassa poecilosticta* Smith. The latter will therefore have to be considered a synonym of *Nassa quantula* Gould, the present species. Cat. No. 186756, U.S.N.M., contains four specimens from Port Alfred (Coll. No. 117).

Genus

Adams.

EUTHYR

specimens from Port Alfred

Cat. No. 187018, U.S.N.M.
No. 552).

U.S.N.M., six from the same
U.S.N.M., one specimen from

EUTHYR

Cat. No. 186753, U.S.N.M.
No. 112).

DUNKER.

specimens collected by William
Exploring Expedition at Simons Bay.
Port Alfred (Coll. No. 119).
the same place (Coll. No. 1011),
M., from the same locality (Coll.

Shell fusiform, with
even light brown
is lightly dotted
lated; the first
whorls appressed
shoulder, occu-
is marked by
punctate, suture
sutures on
terminate
slight tubercle
and post-
being de-
aperture
The
No. 552
11.5
specimen

EUTHYR, species?

specimen too poor to be specifically
Hope.

EUTHYR, species?

contains three specimens of this species

EUTHYR, species?

single individual collected by William
Exploring Expedition at Simons Bay.

EUTHYR, species?

from Cape of Good Hope. Cat. No.
labelled Africa. Cat. No. 64381,
d Hope. Cat. No. 97996, U.S.N.M.,
186760, U.S.N.M., three from Port
No. 272142, U.S.N.M., five specimens
No. 272120, U.S.N.M., one specimen

EUTHYR, species?

EUTHYR, species?

from Algoa Bay. Cat. No. 97990.
Cat. No. 75567, U.S.N.M., three from
186762, U.S.N.M., four from Port
Cat. No. 18173, U.S.N.M., from

EUTHYR, species?

U.S.N.M., one from Port Alfred (Coll. No. 122).

Shells
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whorls
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Genus *BULLIA* Gray.*BULLIA ANNULATA* Lamarck.

Cat. No. 101, U.S.N.M., four specimens collected by William Stimpson on the North Pacific Exploring Expedition at Cape of Good Hope. Cat. No. 98026, U.S.N.M., three from Albany. Cat. No. 186767, U.S.N.M., four from Port Alfred (Coll. No. 128).

BULLIA TRIFASCIATA Smith.

Cat. No. 186764, U.S.N.M., three from Port Alfred (Coll. No. 125).

BULLIA AEPYNOTA, new species.

Plate 35, fig. 5.

Shell elongate-conic, light yellow. Nuclear whorls decollated. Postnuclear whorls strongly, tabulatedly shouldered at the summit after the second turn. First two turns feebly rounded, the remainder slightly concave in the middle between the sutures. Surface marked by feeble, retractive lines of growth and well incised spiral lines, which appear to be confined to the anterior two-thirds of the whorls between the sutures. Sutures strongly marked by the flattened shoulder at the summit. Periphery of the last whorl well rounded. Base moderately long, rounded, marked by a few incised spiral lines. Aperture with the posterior angle obtuse, channeled anteriorly; outer lip thin; columella glazed with a thin callus.

The type, Cat. No. 250443, U.S.N.M., comes from Port Alfred (Coll. No. 1316). It has seven postnuclear whorls and measures: Length, 19 mm.; diameter, 6.5 mm.

BULLIA LARA, new species.

Plate 38, fig. 3.

Shell large, flesh colored. Nuclear whorls decollated. Postnuclear whorls well rounded, with a rounded shoulder at the summit, marked between the sutures by equal and equally spaced, incised, spiral lines, which are strongest at the anterior two-thirds. Sutures constricted, Aperture large, channeled anteriorly. Posterior angle obtuse; outer lip thin; columella stout and curved; parietal wall glazed with a thin callus.

The type, Cat. No. 249737, U.S.N.M., comes from Port Alfred (Coll. No. 1009). It has eight postnuclear whorls and measures: Length, 38 mm.; diameter, 19 mm. Cat. No. 250443a another specimen from the same place (Cat. No. 1316a). This specimen somewhat resembles *Bullia tenuis* Reeve, but differs from it by being much more elongated—that is, less broadly conic.

BULLIA TENUIS Reeve.

Cat. No. 16826, U.S.N.M., two specimens from Cape of Good Hope. Cat. No. 186766, U.S.N.M., two from Port Alfred (Coll. No. 127).

STILIA ALFREDENSIS, new species.

Plate 3, fig. 2.

Shell elongate-conic, cream yellow marked with a rust brown band which extends over a little more than the anterior half between the sutures. This band is not of uniform purity but consists of a series of dark and lighter elements which give the whorls the false appearance of having brown ribs. (Nuclear whorls worn.) Post-nuclear whorls rounded, narrowly, tabulatedly shouldered at the summit, marked by 10 incised spiral striations of which the posterior six are about equally strong and occupy the posterior third of the whorls between the sutures. These are much finer and closer spaced than the other four which divide the remaining space between the sutures into subequal sections. Periphery of the last whorl well rounded. Sutures strongly constricted. Base slightly produced, marked like the anterior two-thirds between the sutures, the incised lines being a little closer on the extreme base than they were on the periphery. Aperture suboval, channeled anteriorly; posterior angle very deeply obtuse; outer lip thin; columella curved, provided with a strong callus which also extends over the parietal wall.

Type. Cat. No. 187011, U.S.N.M., comes from Port Alfred (Coll. No. 545). It has eight whorls, and measures: Length, 27 mm.; diameter, 9.2 mm.

Other additional lots from Port Alfred are in the collection of the United States National Museum, as follows: Cat. No. 187012, one specimen (Coll. No. 545); Cat. No. 250445, one specimen (Coll. No. 545); Cat. No. 250446, one specimen (Coll. No. 545); Cat. No. 250447, one specimen (Coll. No. 1008).

STILIA ALMO, new species.

Plate 35, fig. 4.

Shell elongate-conic. Nuclear whorls a little more than half covered by a smooth, light orange-brown band. Post-nuclear whorls light orange, with a strong sloping shoulder which extends over the anterior half of the whorls between the sutures, the anterior half forming a decided angle. Surface of the shell marked by slightly retractive axial lines of growth and by spiral lines of which the latter are chiefly confined to the sloping shoulder. There are three extend anterior to this. The incised spiral lines increase in number from the early whorls to the last whorl, but not in size and spacing. About a dozen strong spiral lines, many less strong, occur upon the shoulder of the last whorl. Aperture large, channeled anteriorly. Posterior angle very deeply obtuse. Columella sigmoid; parietal wall glazed.

Type. Cat. No. 250448, U.S.N.M., comes from Port Alfred (Coll. No. 545). It has 8½ post-nuclear whorls, and measures: Length, 27 mm.; diameter, 9 mm.

BULLIA CALLOSA Wood.

o. 97999, U.S.N.M., three specimens from Albany. Cat. No. J.S.N.M., one from Port Alfred (Coll. No. 124).

BULLIA, species?

o. 250447, U.S.N.M., contains the tip of an exceedingly young individual, from Port Alfred, which we are unable to identify with any of the known forms (Coll. No. 1320).

BULLIA NATALENSIS Krauss.

o. 118184, U.S.N.M., one specimen collected by McGuire in Africa.

BULLIA PURA Melvill.

o. 186771, U.S.N.M., six from Port Alfred (Coll. No. 132).
o. 187010, U.S.N.M., six from the same locality (Coll. No. 132).
o. 187013, U.S.N.M., one from the same place (Coll. No. 132).

BULLIA DILUTA Krauss.

o. 186770, U.S.N.M., two specimens from Port Alfred (Coll. No. 272133, U.S.N.M., four from Port Elizabeth).

BULLIA, species?

o. 250448, U.S.N.M., contains a young specimen from Port Alfred, white color, the early whorls of which are exceedingly young. It is different from any of the described forms I know, but may serve for a type of a new species. (Coll. No. 1321.)

BULLIA DIGITALIS Meuschen.

o. 178, U.S.N.M., two collected by William Stimpson on the Pacific Exploring Expedition at Simons Bay. Cat. No. J.S.N.M., two from Cape of Good Hope. Cat. No. 98028, , four from Albany. Cat. No. 186769, U.S.N.M., four from Port Alfred (Coll. No. 130).

BULLIA SEMIFLAMMEA Reeve.

o. 16825, U.S.N.M., three specimens from Cape of Good Hope.

BULLIA RHODOSTOMA Gray.

o. 21798, U.S.N.M., one specimen collected by Dunker at Port Alfred. Cat. No. 98027, U.S.N.M., 15 specimens from Albany. 186768, U.S.N.M., two from Port Alfred (Coll. No. 129).

BULLIA POLITA Lamarck.

o. 131459, U.S.N.M., one specimen from Bird Island, Algoa Bay.

BULLIA, species?

o. 250444, U.S.N.M., contains a species of *Bullia* from Port Alfred, belonging to the group of *B. rhodostoma* Sowerby. It is

smaller than that species and has a channeled suture. The specimen before me received an injury during its youth and I am not sure but that the dwarfing and the channeling of the suture may be due to that cause. I therefore refrain from bestowing a name upon it (Coll. No. 1317.)

BULLIA LAEVISSIMA Gmelin.

Cat. No. 172, U.S.N.M., three collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. Cat. No. 16821, U.S.N.M., one from Cape of Good Hope. Cat. No. 16822, U.S.N.M., one from same locality. Cat. No. 186765, U.S.N.M., one from Port Alfred (Coll. No. 126).

Family COLUMBELLIDAE.

Genus COLUMBELLA Lamarck.

COLUMBELLA (SEMINELLA) LIGHTFOOTI Smith.

Cat. No. 186694, U.S.N.M., seven specimens from Port Alfred (Coll. No. 53). Cat. No. 227751, U.S.N.M., eight specimens from the same locality (Coll. No. 846). Cat. No. 227752, U.S.N.M., four specimens from the same source (Coll. No. 847).

COLUMBELLA (SEMINELLA) CAPENSIS Smith.

Six lots of this species, all from Port Alfred, are in the collection of the United States National Museum. Cat. No. 187031, 24 specimens (Coll. No. 567). Cat. No. 227747, six specimens (Coll. No. 842). Cat. No. 227748, four specimens (Coll. No. 843). Cat. No. 227749, four specimens (Coll. No. 844). Cat. No. 227750, four specimens (Coll. No. 845). Cat. No. 250475, one specimen (Coll. No. 1348).

COLUMBELLA (SEMINELLA) ALFREDENSIS, new species.

Plate 37, fig. 5.

Shell small, elongate-ovate; flesh colored, with fairly equally distributed, decidedly, retractorily slanting, brownish streaks on the middle of the whorls between the sutures and a few interrupted spiral lines of brown on the base. Nuclear whorls two, smooth. Post-nuclear whorls strongly shouldered at the summit, marked by very strong, rounded, decidedly protractive axial ribs, which are about as wide as the spaces that separate them. These ribs extend prominently from the summit to the suture. On the last whorl they become evanescent on the base. Spiral sculpture apparently absent. Periphery of the last whorl well rounded. Columella marked by two feebly developed spiral cords at its insertion. Aperture moderately large, channeled at the posterior angle and decidedly so anteriorly; middle of the outer lip drawn forward into a claw-like element; parietal wall and the inner edge of the columella glazed with a moderately thick callus.

type, Cat. No. 249744, U.S.N.M., comes from Port Alfred (No. 1016). It has five postnuclear whorls, and measures: 6.1 mm.; diameter, 3 mm.

COLUMBELLA (SEMINELLA), species?

No. 250474, U.S.N.M., contains a young specimen of an apparently undescribed *Seminella* from Port Alfred (Coll. No. 1347).

COLUMBELLA (ANACHIS) BECKERI Sowerby.

No. 182029, U.S.N.M., one specimen from Port Alfred (Coll.).

COLUMBELLA (ANACHIS) ALGOENSIS Sowerby.

No. 186696, U.S.N.M., one specimen from Port Alfred (Coll.

COLUMBELLA (ANACHIS) KRAUSSI Sowerby.

umbella kraussi SOWERBY, Proc. Zool. Soc., p. 53, 1844 = *Columbella* (*Anachis*) *ulminea* GOULD, Proc. Bost. Soc. Nat. Hist., vol. 7, p. 334, 1860.

No. 130, U.S.N.M., three specimens Gould's cotypes collected from Stimpson on the North Pacific Exploring Expedition at Cape of Good Hope; and Cat. No. 186698, U.S.N.M., six specimens from Port Alfred (Coll. No. 57).

COLUMBELLA (ANACHIS) IO, new species.

Plate 37, fig. 4.

elongate-conic, light brown, variegated with flesh color. Whorls smooth, well rounded. Postnuclear whorls well, feebly shouldered at the summit, the first three marked by ill-defined, broad, decidedly retractive axial ribs, the rest excepting lines of growth and irregularly disposed, fine striations. Sutures moderately constricted. Periphery of the shell well rounded. Base rather long, marked by lines of growth and few spiral striations. The columella bears seven lirations which become successively weaker from the insertion to the pit. Aperture moderately large. Posterior angle acute; outer lip thin. Type, Cat. No. 250469, U.S.N.M., comes from Port Alfred (Coll. 2). It has five postnuclear whorls, and measures: Length, 6.1 mm.; diameter, 2.2 mm.

COLUMBELLA (ANACHIS), species?

No. 250471, U.S.N.M., contains a young shell from Port Alfred which we are unable to connect with any of the described species (Coll. No. 1344).

COLUMBELLA (ANACHIS), species?

No. 249746, U.S.N.M., contains a young shell from Port Alfred which we are unable to connect with any of the described species (Coll. No. 1018).

COLUMBELLA (ALIA) PYRAMIDALIS Sowerby.

Cat. No. 186695, U.S.N.M., three specimens from Port Alfred (Coll. No. 54).

COLUMBELLA (ALIA) ADJACENS Smith.

Cat. No. 186699, U.S.N.M., one specimen from Port Alfred (Coll. No. 58).

COLUMBELLA (ALIA) ALBUGINOSA Reeve.

Three lots of this species are in the United States National Museum from the Cape of Good Hope. Cat. No. 18222, one specimen. Cat. No. 31920, two specimens, and one Cat. No. 102722. In addition to these, we have seen six lots from Port Alfred, four of which are in the United States National Museum and two have been returned to Colonel Turton. Cat. No. 186697, five specimens (Coll. No. 56). Cat. No. 227754, six specimens (Coll. No. 849). Cat. No. 227755, four specimens (Coll. No. 850). Those returned have (Coll. No. 1605) 59 specimens and (Coll. No. 1606) 17 specimens.

COLUMBELLA (ALIA) APICATA Smith.

Cat. No. 250465, U.S.N.M., contains one specimen from Port Alfred (Coll. No. 1338).

COLUMBELLA (ALIA), species?

Cat. No. 250478, U.S.N.M., contains a worn specimen of a very minute *Alia* from Port Alfred, which I am unable to identify (Coll. No. 1351).

COLUMBELLA (ALIA), species?

Cat. No. 250473, U.S.N.M., contains the early whorls of a beautiful, slender species belonging to this subgenus, from Port Alfred, which I am unable to connect with any of the described species (Coll. No. 1346).

Genus *ALCIRA* H. Adams.*ALCIRA ELEGANS* H. Adams.

Cat. No. 31920a, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 186693, U.S.N.M., one specimen from Port Alfred (Coll. No. 52). Cat. No. 272139, U.S.N.M., six specimens from Port Elizabeth, and Cat. No. 272140, U.S.N.M., two from South Africa.

ALCIRA, species?

Cat. No. 250466, U.S.N.M., contains a specimen of *Alcira* from Port Alfred, which is shorter and broader than *A. elegans*, but it is too badly worn to serve for description of a new species (Coll. No. 1339).

ALCIRA, species?

Cat. No. 250481, U.S.N.M., contains a very young specimen of a small slender species from Port Alfred, which appears to belong to this genus (Coll. No. 1354).

Family MURICIDAE.

Genus MUREX Linnaeus.

MUREX UNCINARIUS Lamarck.

16861, U.S.N.M., one from Cape of Good Hope. Cat. No. U.S.N.M., three collected by Layard at the same place. Cat. U.S.N.M., three from Albany. Cat. No. 186772, U.S.N.M., Port Alfred (Coll. No. 133), and Cat. No. 252155, U.S.N.M., Africa without specific locality. Cat. No. 272150, U.S.N.M., ten from Algoa Bay. Cat. No. 272151, U.S.N.M., three Cape of Good Hope.

MUREX ALFREDENSIS, new species.

Plate 37, fig. 6.

Small, yellowish white, with a zone of wax yellow, which covers the central half of each whorl, leaving the posterior half of the sutures and the basal tip white. (Nuclear whorls decolourless; subnuclear whorls well rounded, ornamented with strong ribs of which ten occur upon all the whorls. These lamellae are recurved, and project at their tips considerably above the shoulder of the whorls. The intercostal spaces are scarcely raised, they are about three times as wide as the ribs and are crossed by slender and equally spaced spiral threads, of which seven occur on the first, eight upon the second, and ten upon the penultimate between the sutures. In addition to the above-mentioned spiral threads the spire is marked by numerous, very fine axial lines of minute granules tabulatedly shouldered; the shoulder crossed by the phary of the last whorl gently rounded. Base quite produced by the continuations of the axial ribs which extend uninterruptedly to the extreme anterior portion of the base, and crossed by ten equal and equally spaced, spiral threads, which are those of the spire in strength and spacing. Aperture channelled anteriorly; outer lip reinforced by a very thick callus which is expanded and flattened and is marked by the spiral lines. The inner lip strongly curved, reflected over and appressed to the parietal wall covered by a thick callus.

Specimen, Cat. No. 227763, comes from Port Alfred. It has four whorls, and measures: Length, 6 mm.; diameter, 3 mm. (No. 858).

Genus TROPHON Montfort.

TROPHON KOWIENSIS Sowerby.

No. 187032, U.S.N.M., one from Port Alfred (Coll. No. 568). No. 227766, U.S.N.M., two specimens from the same locality (No. 861).

TROPHON INSIGNIS Sowerby.

Cat. No. 186777, U.S.N.M., three specimens from Port Alfred (Coll. No. 138).

TROPHON, species?

Cat. No. 250464, U.S.N.M., contains the very tip of a *Trophon* from Port Alfred, too young to be identified (Coll. No. 1337).

TRAPHON, species?

Cat. No. 250467, U.S.N.M., contains the tip of another species *Trophon*, from Port Alfred, too young to be identified (Coll. No. 1340).

Genus **TRITONALIA** Fleming.**TRITONALIA CRAWFORDI** Sowerby.

Cat. No. 109601, U.S.N.M., six specimens from Cape of Good Hope.

Cat. No. 186776, U.S.N.M., three from Port Alfred (Coll. No. 133).

Cat. No. 43083, U.S.N.M., nine specimens from Cape of Good Hope.

Cat. No. 98041, U.S.N.M., 28 from Albany. Cat. No. 16884, U.S.N.M., five from Cape of Good Hope. Cat. No. 186773, U.S.N.M., three from Port Alfred (Coll. No. 134).

TRITONALIA PURPUROIDES Dunker.

Cat. No. 272129, U.S.N.M., four specimens from the Cape of Good Hope.

TRITONALIA KIENERI Reeve.

Cat. No. 98044, U.S.N.M., four specimens from Albany. Cat. No. 186775, U.S.N.M., three from Port Alfred (Coll. No. 136).

TRITONALIA BABINGTONI Sowerby.

Cat. No. 186774, U.S.N.M., three specimens from Port Alfred (Coll. No. 135).

Cat. No. 227767, U.S.N.M., six specimens from the same locality (Coll. No. 862), and Cat. No. 227768, U.S.N.M., four specimens from the same source (Coll. No. 863).

Genus **SISTRUM** Montfort.**SISTRUM ALFREDENSIS**, new species.

Shell elongate-ovate, pale chestnut brown, washed with a green suffusion, interior pale brown. Nuclear whorls decollated. Posterior nuclear whorls with a prominent shoulder in the middle between the sutures, ornamented with strong coarse ribs, which become diminished in size from the shoulders posteriorly and anteriorly. Of the ribs 12 occur upon the second and 10 upon the remaining turns. The spaces between the ribs are about two-thirds as wide as the ribs. In addition to this the entire surface is covered by coarse lines of growth. The spiral sculpture consists of six feebly developed slender threads between the summit and the shoulder, and three strong cords between the shoulder and the suture, the first of these three cords being on the posterior portion of the shoulder. A slender spiral

thread appears midway between the spiral cords. Periphery of the last whorl well-rounded. Base somewhat produced, marked by seven cords equaling those on the anterior portion of the spire in strength. The four grooves between the cords anterior to the periphery have each a slender spiral thread. Aperture irregularly oval, channeled anteriorly and posteriorly; outer lip thin at the edge, where it is rendered somewhat sinuous by the external sculpture, thick within and armed by a callus, bearing seven denticles, columella stout, slightly curved, and partly reflected over the body whorl.

The type has six whorls and measures: Length, 18.5 mm.; diameter, 10.1 mm. The type and another specimen, Cat. No. 272130, U.S.N.M., were received from Mr. John B. Henderson in a collection recently donated to the United States National Museum, which was purchased from Sowerby and Fulton, and was labelled "*Pentadactylus lividus* Reeve, South Africa." It is not Reeve's species, which comes from the Philippines and which we have in the collection of the National Museum from the type locality. True *lividus* is a much stouter species with different detailed sculpture. The specimens reached me as this paper was passing through press. I was therefore unable to add a figure of it.

Genus THAIS Bolten.

THAIS CAPENSIS Poth.

Cat. No. 186778, U.S.N.M., one from Port Alfred (Coll. No. 139).

THAIS TEXTURATA Smith.

Cat. No. 186779, U.S.N.M., two from Port Alfred (Coll. No. 140).

THAIS CASTANEA Kuster.

Cat. No. 186782, U.S.N.M., two from Port Alfred (Coll. No. 143).

THAIS CATARACTA Chemnitz.

Cat. No. 186781, U.S.N.M., three from Port Alfred (Coll. No. 142).

THAIS SQUAMOSA Lamarck.

Cat. No. 186780, U.S.N.M., one from Port Alfred (Coll. No. 141).

Genus LATIAXIS Swainson.

LATIAXIS ROSACEUS Smith.

Cat. No. 186783, U.S.N.M., two from Port Alfred (Coll. 144).

Family CORALLIOPHILIDAE.

Genus CORALLIOPHILA H. and A. Adams.

CORALLIOPHILA RUBROCOCCINEA Melvill and Standen.

Cat. No. 186784, U.S.N.M., one specimen from Port Alfred (Coll. No. 145).

Cat. No. 187028, U.S.N.M., one from the same place (Coll. No. 564).

EPITONIUM TENEBROSUM Sowerby.

1836, U.S.N.M., contains two specimens of this species, Alfred (Coll. No. 203). Cat. No. 249716, U.S.N.M., additional specimens from the same locality. (Coll.

EPITONIUM DURBANENSE Smith.

6838, U.S.N.M., two specimens from Port Alfred (Coll.

EPITONIUM LACTEUM Krauss.

5, U.S.N.M., one specimen collected by William Stimp-orth Pacific Exploring Expedition, at False Bay, Cape e. Cat. No. 186839, U.S.N.M., three specimens from coll. No. 206).

EPITONIUM AGLAIA, new species.

Plate 17, fig. 4.

ste-conic, white. (Nuclear whorls decollated.) Post-s well rounded; marked by numerous, very retractive ich are about one-half as wide as the spaces that sepa-d an occasional varix. The latter are irregularly dis-the axial ribs, 28 occur upon the first and second of the rls, 30 upon the third, 36 upon the fourth, 40 upon the upon the penultimate turn. In addition to the axial ls are marked by numerous spiral striations, which are rowded at the summit than on the rest of the whorl. hese lriations occur between the sutures on the penulti-Sutures strongly constricted. Periphery of the last by a feeble angulation. Base moderately long, well ked by closely crowded, spiral striations. Aperture iter lip forming a thickened peristome; inner lip strongly omewhat reflected; parietal wall covered with a thick renders the peristome complete.

Cat. No. 187037, U.S.N.M., comes from Port Alfred 4). It has seven postnuclear whorls remaining, and ngth, 12 mm.; diameter, 6 mm. Cat. No. 250412, ntains another specimen from Port Alfred (Coll. No.

EPITONIUM, species?

M., contains the tip of a broadly conic s fine axial ribs, and spiral lriations in the hfferent from any *Epitonium* known from om Port Alfred (Coll. No. 1284).

Genus *ACRILLA* H. Adams.*ACRILLA THALIA*, new species.

Plate 17, figs. 5, 8.

Shell elongate-conic, light brown, with a narrow white band on the middle of each whorl. Nuclear whorls decollated. Postnuclear whorls decidedly rounded, separated by a strongly constricted suture, marked by well developed, very regular, almost vertical axial ribs, of which 18 occur upon the first of the remaining turn, 20 upon the second; 22 upon the third and fourth; 26 upon the fifth; 28 upon the sixth, and 34 upon the seventh and the penultimate turn. These ribs are about one third as wide as the spaces that separate them. Intercoastal spaces marked by irregularly distributed, feebly incised, spiral striations. Periphery of the last whorl well rounded; marked by a poorly developed spiral cord. Base moderately rounded, marked by the continuations of the axial ribs, and feebly incised, spiral striations. Aperture oval; outer lip thin, showing the external markings within; inner lip decidedly curved and reflected; parietal wall glazed with a thin callus.

The type and another specimen, Cat. No. 186840, come from Port Alfred (Coll. No. 207). The type has nine whorls remaining and measures: Length, 33 mm.; diameter, 8 mm. The other specimen which has lost the nuclear whorls, having the nine succeeding turns, measures: Length, 17 mm.; diameter, 4.3 mm.

Genus *GRAPHIS* Jeffreys.*GRAPHIS AFRICANA*, new species.

Plate 36, fig. 10.

Shell very minute, slender, elongate-conic, translucent. Nuclear whorls a little more than two, somewhat inflated, smooth. Post-nuclear whorls well rounded, appressed at the summit, marked by almost vertical, somewhat sinuous axial riblets, of which 18 occur upon the first, 22 upon the second and third, 24 upon the fourth and fifth, and 26 upon the penultimate turn. These riblets are about one-half as wide as the spaces that separate them. Intercoastal spaces crossed by slender spiral threads, of which about 15 occur between the sutures on the later whorls. Periphery of the last whorl well rounded. Base moderately prolonged, well rounded, marked posteriorly by the feeble continuations of the axial ribs which vanish before crossing half of the base, and numerous, very fine, incised, spiral striations. Aperture broadly oval; posterior angle obtuse; outer lip thin, showing the external sculpture within; inner lip thin and slightly reflected.

The type, Cat. No. 249703, U.S.N.M., comes from Port Alfred (Coll. No. 978). It has six and a half postnuclear whorls and measures: Length, 2.3 mm.; diameter, 0.5 mm. Cat. No. 249708 (No. 980), contains one specimen from Port Alfred.

Family JANTHINIDAE.

Genus JANTHINA Bolten.

JANTHINA COMMUNIS Lamarck.

Cat. No. 77279, U.S.N.M., contains one specimen from the Cape of Good Hope. Cat. No. 97994, U.S.N.M., five specimens from Albany. In addition to these, the Museum contains three lots from Port Alfred. Cat. No. 249755, three specimens. (Coll. No. 1027.) Cat. No. 250503, one specimen (Coll. No. 1376). Cat. No. 250504, one specimen (Coll. No. 1377).

JANTHINA GLOBOSA Swainson.

Cat. No. 186833, U.S.N.M., contains one specimen from Port Alfred (Coll. No. 200).

JANTHINA TROCHOIDEA Reeve.

Cat. No. 186834, U.S.N.M., two specimens from Port Alfred (Coll. No. 201).

JANTHINA EXIGUA Lamarck.

Cat. No. 186835, U.S.N.M., one specimen from Port Alfred (Coll. No. 202). Cat. No. 272131, U.S.N.M., six specimens from Algoa Bay.

JANTHINA FRAGILIS Lamarck.

Cat. No. 187096, U.S.N.M., one specimen from Port Alfred (Coll. No. 640).

Family EULIMIDAE.

Genus MELANELLA Bowdich.

MELANELLA DILECTA Smith.

Four lots of this species are in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186855, four specimens (Coll. No. 225); Cat. No. 227730, four specimens (Coll. No. 825); Cat. No. 227731, six specimens (Coll. No. 826); Cat. No. 249707, one specimen (Coll. No. 979).

MELANELLA ALGOENSIS Smith.

Cat. No. 249712, U.S.N.M., contains one specimen from Port Alfred (Coll. No. 984).

MELANELLA SIMPLEX Sowerby.

Cat. No. 186857, U.S.N.M., contains one specimen from Port Alfred (Coll. No. 227).

MELANELLA CARIFA, new species.

Plate 20, fig. 7.

Shell small, slender, flexed, semitranslucent, polished, bluish white. Whorls slightly rounded on the curved and slightly concave on the opposite side, appressed at the summit to such an extent that

the suture is scarcely apparent, while the posterior limit of the body cavity shining through the substance of the shell assumes the appearance of a suture. The whorls are marked at irregular intervals by slightly impressed axial lines marking varices. Periphery of the last whorl well rounded. Base produced. Aperture oval; posterior angle very acute; outer lip thin at the edge, produced into a claw-like element midway between the base and the posterior angle; inner lip thick, slightly curved, reflected over and adnate to the body whorl; parietal wall covered by a thin callus.

The type, Cat. No. 250384, U.S.N.M., comes from Port Alfred (Coll. No. 1257). It has 10 whorls, and measures: Length, 4.1 mm.; diameter, 1.2 mm.

A young specimen from the same locality is entered as Cat. No. 250383, U.S.N.M. (Coll. No. 1256).

MELANELLA ICAIRA, new species.

Plate 20, fig. 3.

Shell very small, stout, decidedly twisted, semitranslucent. Nuclear whorls well rounded. Postnuclear turns appressed at the summit, well rounded, polished, marked by an occasional varix. The posterior limit of the inside of the whorls shining through the substance of the shell appears as a false suture. Sutures scarcely visible. Periphery of the last whorl slightly angulated, inflated. Base prolonged, inflated, and well rounded. Aperture rather large; posterior angle acute; outer lip drawn forward in the middle into a claw-like element; inner lip thin, reflected over and adnate to the body whorl; parietal wall glazed by a thin callus.

The type and another specimen, Cat. No. 250380, U.S.N.M., come from Port Alfred (Coll. No. 1253). The type has seven whorls, and measures: Length, 2.2 mm.; diameter, 1 mm.

MELANELLA ALFREDENSIS, new species.

Plate 19, fig. 5.

Shell small, elongate-conic, slightly falcate, almost transparent bluish white. The whorls are slightly rounded, appressed at the summit, through which the preceding whorl shines, giving the aspect of having a double suture. Suture feebly impressed. Periphery well rounded. Base attenuated, well rounded; surface polished and marked by exceedingly fine, incremental and an occasional, irregularly disposed varix. Aperture ovate; lip somewhat clavate; inner lip appressed; gently curved; parietal wall glazed with a thin callus.

The type, Cat. No. 187076, U.S.N.M., comes from Port Alfred. It has eight postnuclear whorls, and measures:

MELANELLA IOTA, new species.

Plate 19, fig. 2.

exceedingly minute, translucent, bluish white, falcate. The valve almost flattened, appressed at the summit, separated by a perceptible suture, and of glassy texture, marked by an almost inconspicuous varix. Periphery of the last whorl well defined. Base somewhat attenuated, well rounded. Aperture oval; thin, clavate; inner lip short, strongly curved and apparietal wall covered by a thick callus.

Type and three specimens, Cat. No. 187080, U.S.N.M., from Port Alfred (Coll. No. 621). The type has seven whorls, and : Length, 1.5 mm.; diameter, 0.5 mm.

No. 250378, U.S.N.M., contains two additional specimens from the same locality (Coll. No. 1251).

MELANELLA DISTINCTA SmKh.

No. 187075, U.S.N.M., contains two specimens from Port Alfred (Coll. No. 616).

MELANELLA LANGLEYI Sewerby.

No. 186856, U.S.N.M., six specimens from Port Alfred (Coll. No. 617).

MELANELLA FARICA, new species.

Plate 20, fig. 1.

Small, very irregularly elongate-conic, semitranslucent, bluish white. Postnuclear whorls well rounded, creeping up on the preceding and giving the outline at the summit a somewhat excurved shape, the extreme summit being very feebly shouldered. This, together with the fact that the posterior limit of the inside of the whorls shines through the substance of the shell, gives the appearance of having a spiral cord at the summit. The whorls are very high between the sutures, and are smooth and polished, forming varices at intervals of slightly more than one-half a whorl, forming almost two lines of varices on the two sides of the sutures strongly marked. Periphery of the last whorl well defined.

Base attenuated. Aperture oval; posterior angle acute; produced into a claw-like element in its middle; inner lip straight, oblique, reflected over and adnate to the body of the parietal wall covered with a thick callus, which renders the aperture complete.

Type and another specimen, Cat. No. 249711, U.S.N.M., from Port Alfred (Coll. No. 983). The type has seven whorls, and : Length, 3 mm.; diameter, 0.8 mm.

No. 250379, U.S.N.M., contains another specimen of this form from the same locality (Coll. No. 1252).

MELANELLA TRAZZI, new species.

Plate 19, fig. 9.

Shell small, elongate-conic, very slightly falcate, bluish translucent. The whorls are very gently rounded; appressed at summit, through which the preceding whorl shines, which gives shell the appearance of having a double suture. Suture scarcely marked. Periphery of the last whorl slightly inflated. Base moderately long, well rounded; entire surface marked by exceedingly fine lines of growth, and an occasional inconspicuous varix. Aperture oval; posterior angle acute; outer lip clavate; inner lip very oblique, slender, strongly curved and decidedly reflected, free; parietal wall covered with a moderately thick callus.

The type and two other specimens, Cat. No. 187078, U.S.N.M., come from Port Alfred (Coll. No. 619). The type has eight whorls and measures: Length, 3.2 mm.; diameter, 1.1 mm.

MELANELLA ASGER, new species.

Plate 25, fig. 7.

Shell very minute, bluish white; transparent; not falcate. Whorls almost flattened; appressed at the summit, through which the preceding whorl shines, which lends the shell the aspect of having a double suture. Suture scarcely perceptible. Periphery of the last whorl well rounded. Base moderately long, well rounded; entire surface of spire and base marked by exceedingly fine, increasing lines. No varicial markings are apparent on any of our specimens. Aperture oval, posterior angle acute; outer lip clavate; inner lip short, curved, slightly reflected; parietal wall covered by a moderately thick callus.

The type and two specimens, Cat. No. 187079, U.S.N.M., come from Port Alfred (Coll. No. 620). The type has five and one-half whorls, and measures: Length, 1.7 mm.; diameter, 0.7 mm.

Cat. No. 250382, U.S.N.M., contains another specimen from the same locality (Coll. No. 1255).

MELANELLA, species?

Cat. No. 250385, U.S.N.M., contains the tip of a large, straight species from Port Alfred, differing from any of those I have seen from South Africa (Coll. No. 1258).

MELANELLA ACRIFA, new species.

Plate 20, fig. 8.

Shell large, regularly elongate-conic, thin. Nuclear whorls two, well rounded, forming a somewhat bulbous apex. Postnuclear whorls well rounded, appressed at the summit, the appressed portion appearing as a slender thread; entire surface marked by almost vertical, somewhat sinuous, strongly curved lines of growth. Sutures

constricted. Periphery of the last whorl well rounded. Base moderately long, well rounded, marked like the spire. Aperture oval; posterior angle acute; outer lip thin, showing the growth lines within; inner lip almost vertical, decidedly reflected, free on the anterior half; parietal wall glazed with a moderately thick callus.

The type and another specimen, Cat. No. 249713, U.S.N.M., come from Port Alfred (Coll. No. 985). The type has six postnuclear whorls, and measures: Length, 9.2 mm.; diameter, 3.1 mm.

MELANELLA, species ?

Cat. No. 250386, U.S.N.M., contains the tip of a *Melanella*, consisting of five whorls, which are absolutely cylindrical, and differs from anything I know of from South Africa, but I refrain from describing it until better material is at hand. Port Alfred (Coll. No. 1259).

MELANELLA CIVARA, new species.

Plate 20, fig. 5.

Shell minute, acicular, semitranslucent, flesh-colored, variegated with brown. Nuclear whorls two, well rounded, translucent, pale brown. Postnuclear turns very slightly rounded, almost transparent, variegated with translucent pale brown and opaque flesh-colored spots, appressed at the summit, polished, apparently without varical markings. Suture scarcely defined. The inner posterior termination of the whorls appear as a suture through the substance of the shell. Periphery well rounded. Base attenuated, well rounded. Aperture elongate-oval; posterior angle acute; outer lip drawn forward in the middle to form a claw-like element; inner lip almost straight, oblique, reflected over and appressed to the body whorl throughout its entire length; parietal wall glazed by a moderately thick callus.

The type, Cat. No. 250381, U.S.N.M., comes from Port Alfred (Coll. No. 1254). It has five postnuclear whorls, and measures: Length, 2.1 mm.; diameter, 0.6 mm.

MELANELLA IRAFCA, new species.

Plate 20, fig. 6.

Shell of medium size, regularly elongate-conic, bluish white, flecked with irregularly disposed blotches of pale golden yellow, a narrow peripheral zone of the same tint, and with a small spot of the same color marking the umbilical region. Nuclear whorls decollated. Postnuclear whorls rather high between the sutures, which are very poorly expressed, the posterior termination of the inside of the whorls appearing as the suture. Outer surface polished, marked only by an occasional varical line. Periphery of the last whorl well rounded. Base prolonged, well rounded. Aperture elongate-oval; posterior angle acute; outer lip drawn forward into a claw-like element in the

middle; inner lip somewhat sinuous, reflected over and adnate to the preceding turn; parietal wall covered with a moderately thick callus, which renders the peritreme complete.

The type, Cat. No. 249710, U.S.N.M., comes from Port Alfred (Coll. No. 982). It has seven postnuclear whorls (having lost the nuclear turns), and measures: Length, 5.5 mm.; diameter, 1.6 mm.

Genus *SUBEULIMA* Sowerby.

SUBEULIMA MAGNIFICA, new species.

Plate 19, fig. 6.

Shell elongate-conic, vitreous, semitranslucent; nuclear whorls well rounded, scarcely differentiated from the succeeding turns. Post-nuclear whorls almost flattened, marked with a strong cord at the periphery, the summit of the succeeding turns falling considerably anterior to this cord, which gives the whorls a decidedly overhanging appearance. In addition to this spiral sculpture the whorls are marked by ill-defined, irregularly distributed varices. Sutures rendered conspicuous by the peripheral keel. Base of the last whorl well rounded, somewhat produced, smooth. Aperture oval; posterior angle acute, outer lip moderately thick; inner lip strongly curved and appressed to the base; parietal wall covered with a thick callus, which renders the peritreme complete.

The type and two specimens, Cat. No. 227729 (Coll. No. 824) are from Port Alfred. The type has nine postnuclear whorls, and measures: Length, 5 mm.; diameter, 1.5 mm.

Genus *NISO* Risso.

NISO BALTEATA Sowerby.

Cat. No. 186860, U.S.N.M., contains two specimens from Port Alfred (Coll. No. 230).

NISO ALFREDENSIS, new species.

Plate 18, fig. 6.

Shell elongate-conic, broadly umbilicated, flesh colored, except irregularly disposed varices of chestnut brown and a broad band of the same tint, which occupies the middle of the space between the periphery and the carina, bordering the umbilicus. Nuclear whorls decollated. Post-nuclear whorls moderately rounded, appressed at the summit, marked by fine lines of growth only. Sutures moderately constricted. Periphery of the last whorl feebly angulated. Base short, broadly umbilicated, the outer edge of the umbilicus marked by a spiral cord; the space between this and the periphery well rounded. Aperture small, oval; outer lip thin; inner lip strongly curved, marked by the basal band.

The type and another specimen, Cat. No. 249719, U.S.N.M., come from Port Alfred (Coll. No. 991). The type has nine postnuclear whorls remaining, the nucleus, and probably the first two of the succeeding turns, having been lost. It measures: Length, 11 mm.; diameter, 4.3 mm.

Another specimen from the same locality is entered as Cat. No. 186861, U.S.N.M. (Coll. No. 231).

Family PYRAMIDELLIDAE.

Genus PYRAMIDELLA Lamarck.

PYRAMIDELLA (ORINELLA) AFRICANA, new species.

Plate 14, figs. 2, 4.

Shell elongate-conic, light brown. Nuclear whorls two, small, planorboid, having their axis at right angles to that of the succeeding turns, in the first of which they are very slightly immersed. Post-nuclear whorls almost flat, feebly shouldered at the summit, marked by very fine incremental lines, and exceedingly fine spiral striations. Suture moderately constricted. Periphery of the last whorl well rounded. Base short, well rounded, narrowly umbilicated, marked like the spire. Aperture subquadrate; posterior angle acute; outer lip thin; inner lip almost vertical, strongly reflected, provided with a fold a little anterior to its insertion.

Cat. No. 186841a, U.S.N.M. contains three specimens from Port Alfred (Coll. No. 208). Two of these are young individuals having the nucleus, and one an adult shell, which has lost the nuclear whorls, and probably the first four succeeding turns. The adult specimen, the type, has seven whorls remaining, and measures: Length, 6.1 mm.; diameter, 1.8 mm. One of the young specimens has eight postnuclear whorls, and measures: Length, 3.7 mm.; diameter, 1.2 mm.

PYRAMIDELLA (ORINELLA) ALFREDENSIS, new species.

Plate 14, figs. 5, 7.

Shell elongate-conic, milk white. Nuclear whorls very small, one and three-fourths, planorboid, having their axis at right angles to that of succeeding turns. The left side of the nucleus projects considerably beyond the outline of the postnuclear spire. Postnuclear whorls almost flat; feebly shouldered at the summit, marked by exceedingly fine, retractive, incremental lines, and numerous microscopic spiral striations. Suture moderately constricted. Periphery of the last whorl well rounded. Base well rounded, decidedly umbilicated, marked like the spire. Aperture subquadrate; posterior angle acute; outer lip thin; inner lip very oblique, and decidedly reflected, provided with a strong fold near its insertion; parietal wall glazed with a thin callus.

Two specimens of this species, Cat. No. 186841b, U.S.N.M., come from Port Alfred (Coll. No. 208). One of these is a young individual, which has 10 postnuclear whorls, and measures: Length, 6 mm.; diameter, 2 mm. The other, the type, has lost the nuclear whorls, and early postnuclear turns; the eight remaining measure: Length, 9 mm.; diameter, 3 mm. The present species is closely allied to the preceding, but is in every way much larger; it also differs in coloration, and is more widely umbilicated.

PYRAMIDELLA (ORINELLA) IMA, new species.

Plate 15, fig. 3.

Shell elongate-conic, pale flesh colored, with a broad, pale yellow band immediately below the summit which extends over the posterior third of the whorls between the sutures, and a very narrow, light brown band a little anterior to the periphery. Nuclear whorls decollated. Postnuclear whorls feebly shouldered at the summit, flattened in the middle, marked by fine, slightly retractive lines of growth, and exceedingly fine, closely spaced, spiral striations. Sutures moderately constricted. Periphery of the last whorl strongly rounded. Base short, very strongly rounded, narrowly umbilicated, marked like the spire, the lines of growth being a little stronger than on the spire. Aperture broadly ovate; posterior angle obtuse; outer lip thin; columella slender, oblique, slightly revolute, provided with an oblique fold near its insertion; parietal wall glazed with a thin callus.

The type, Cat. No. 250408, U.S.N.M., comes from Port Alfred (Coll. No. 1281). It has lost the nucleus and the early postnuclear whorls; the eight remaining measure: Length, 7.5 mm.; diameter, 2.5 mm.

PYRAMIDELLA (ACTAEOPIRAMIS) NORNA, new species.

Plate 15, fig. 4.

Shell moderately large, elongate-conic, white. Nuclear whorls slightly, obliquely immersed in the first of the succeeding turns, above which the tilted edge of the last volution only projects. Post-nuclear whorls strongly shouldered at the summit, marked by equal and equally spaced, incised, spiral grooves, which permit the spaces between them, which are about three times as wide as the grooves, to appear as well-raised spiral cords. Of these grooves, six appear upon the first and second, and seven upon the succeeding turns between the sutures. In addition to the spiral grooves, the whorls are marked by very slender, quite regular and regularly spaced, somewhat retractive, axial threads, which are best shown in the grooves which they divide into a series of punctations, about 80 of which occur upon the last turn. The spiral cords between the spiral grooves are slightly

The type and another specimen, Cat. No. 249709, U.S.N.M., come from Port Alfred (Coll. No. 981). The type has six postnuclear whorls, and measures: Length, 4 mm.; diameter, 1.2 mm

Genus **TURBONILLA** Risso.

TURBONILLA (PTYCHEULIMELLA) ERNA, new species.

Plate 16, fig. 2.

Shell very small, elongate-conic, bluish white, translucent. Nuclear whorls at least two, well rounded, forming a depressed helicoid spire, the axis of which is almost at right angles to the axis of the succeeding turns. The nuclear spire is about one-fourth immersed in the first of the succeeding whorls. Postnuclear whorls slightly rounded, strongly appressed at the summit, marked by extremely feeble, almost vertical axial ribs which are so poorly defined that they can scarcely be counted. In addition to the axial sculpture, the entire surface of the whorls is marked by closely spaced, microscopic, spiral striations. Sutures well constricted. Periphery of the last whorl somewhat angulated. Base short, well rounded. Aperture elongate-ovate; posterior angle obtuse, outer lip thin, inner lip strongly curved and slightly reflected; parietal wall covered by a thin callus.

The type and another specimen, Cat. No. 250371, U.S.N.M., come from Port Alfred (Coll. No. 1244). The type has seven postnuclear whorls, and measures: Length, 3 mm.; diameter, 0.7 mm.

TURBONILLA (CHEMNITZIA) GEMMULA Smith.

Cat. No. 186847, U.S.N.M., contains two specimens of this species from Port Alfred (Coll. No. 214).

TURBONILLA (CHEMNITZIA) KRAUSSI Clessin.

Cat. No. 186843a, U.S.N.M., one specimen from Port Alfred (Coll. No. 210a).

TURBONILLA (PSELLIOGYRA) ADABA, new species.

Plate 15, fig. 5.

Shell broadly elongate-conic, white. Nuclear whorls well rounded, smooth, obliquely immersed in the first of the succeeding turns, above which the tilted edge of the last volution only projects. Postnuclear whorls almost flattened, very strongly, tabulatedly shouldered at the summit, crossed by strong, very regular, somewhat sinuous, slightly protractive, axial ribs, of which 20 occur upon the second and third, 22 upon the fourth and fifth, 24 upon the sixth, and 28 upon the penultimate turn. These ribs extend prominently from the shoulder, which they render crenulated, to the periphery of the turn. Inter-costal spaces a little wider than the rib. A spiral cord in the intercostal is present about one-fifth of the space between the sutures

General measures: Length, 7.5 mm.; diameter, 2.2 mm. Cat. No. 186858, U.S.N.M. (Coll. No. 228). Two specimens of this species collected at Port Alfred (Coll. No. 228). Cat. No. 249705, U.S.N.M., two additional specimens from Port Alfred (Coll. No. 977).

PYRAMIDELLA SYRNOLA MINOR Smith.

Cat. No. 186859, U.S.N.M., contains a specimen from Port Alfred (Coll. No. 228).

PYRAMIDELLA (SYRNOLA), species?

Cat. No. 187174, U.S.N.M., contains a young individual from Port Alfred which we are unable to refer to any of the known forms (Coll. No. 228).

PYRAMIDELLA SYRNOLA TARPEIA, new species.

Plate 14, fig. 6.

Shell small, elongate-conic, subdiaphanous. Nuclear whorls small, scarcely immersed in the first of the succeeding turns, above which the rounded, tilted edge of the last volution only projects. Postnuclear whorls high between the sutures, slightly rounded, broadly shouldered at the summit; marked by retractive lines of growth and exceedingly fine, spiral striations. Sutures well impressed. Periphery of the last whorl well rounded. Base somewhat rounded, well rounded, marked like the spire. Aperture oval, slightly acute; outer lip thin, inner lip very short, decidedly reflected over and appressed; parietal wall covered with a thin callus.

Two specimens, Cat. No. 187077, U.S.N.M., come from Port Alfred (Coll. No. 228). The type has almost six postnuclear whorls. Length, 3.7 mm.; diameter, 1.3 mm.

PYRAMIDELLA SYRNOLA HERA, new species.

Plate 14, fig. 6.

Shell small, elongate-conic, subdiaphanous. Nuclear whorls more than one, scarcely immersed in the first of the succeeding turns, above which the rounded, tilted edge of the last volution only projects. Postnuclear whorls high between the sutures, slightly rounded, broadly shouldered at the summit, marked by retractive lines of growth and exceedingly fine spiral striations. The periphery of the last whorl shines through the substance of the succeeding turns to the summit and appears as a band a little differently colored than the rest of the shell. Sutures well marked. Periphery well rounded. Base slightly prolonged, well rounded. Aperture ovate; posterior angle acute; outer lip thin; the inner lip, short; reflected over and appressed to the base; parietal wall covered with a thin callus.

TURBONILLA (PYRGOLAMPROS) ANGEA, new species.

Plate 9, fig. 3.

Elongate-conic, brownish yellow. (Nuclear whorls decollated.) Nuclear whorls very slightly rounded, feebly shouldered at the top, marked by rather broad, low, somewhat protractive axial ribs, of which 16 occur upon the second, 18 upon the third to fifth; 22 upon the sixth; and 22 upon the penultimate turn. These ribs about double the width of the spaces that separate them. In addition to the ribs, the whorls are marked by exceedingly fine, copious, spiral striations. Periphery of the last whorl well rounded. Base moderately long, well rounded, crossed by the very feeble continuations of the axial ribs and exceedingly fine, spiral lines. Aperture oval; posterior angle acute; outer lip thin; inner lip very short, slightly revolute and appressed, provided with a fold at its insertion; parietal wall glazed with a thin callus. Type and another specimen, Cat. No. 186844a, U.S.N.M., from Port Alfred (Coll. No. 211). The type has seven and one-half nuclear whorls, and measures: Length, 5 mm.; diameter, 1.7 mm. No. 250375, U.S.N.M., contains three specimens from the same locality (Coll. No. 1248).

TURBONILLA (PYRGISCUS) HELENA, new species.

Plate 14, fig. 1.

Small, elongate-conic, golden brown. Nuclear whorls, at least forming a depressed helicoid spire which is obliquely immersed in the first of the succeeding turns, above which a portion of the last whorls only projects. Postnuclear whorls strongly, tabulatedly shouldered at the summit, well rounded, somewhat constricted at the top, marked by very regular, slightly retractive, axial ribs, which are about as wide as the spaces that separate them. Of these ribs, there are about 24 on the first and second, 22 upon the third, 26 upon the fourth, 30 upon the fifth, and 32 upon the penultimate whorl. These ribs render the summit of the whorls crenulated. Intercostal spaces strongly impressed, marked by numerous fine, equal, and widely spaced, spiral striations, of which about 30 occur between the whorls on the penultimate turn. Sutures very strongly constricted, moderately long, well rounded, marked by the continuations of the axial ribs, which become enfeebled as they approach the umbilical region, and incised, spiral lines equaling those on the spire in spacing and strength. Aperture oval, posterior angle rendered decidedly obtuse by the shoulder at the summit. Outer lip thin, showing the external sculpture within; inner lip strongly curved, reflected over and appressed to the base, provided with a weak, oblique fold at its insertion. Parietal wall covered by a thin callus.

The type and another specimen, Cat. No. 227732, U.S.N.M., come from Port Alfred (Coll. No. 827). The type has seven postnuclear whorls, and measures: Length, 3.9 mm.; diameter, 1.1 mm.

TURBONILLA (PYRGISCUS) ATOSSA, new species.

Plate 15, fig. 1.

Shell elongate-conic, bluish-white. Nuclear whorls more than two, smooth, the early portion obliquely immersed in the later. Post-nuclear whorls strongly shouldered at the summit, marked by well-rounded, somewhat retractive, strong, axial ribs, of which 16 occur upon the first, 18 upon the second to fourth, and 20 upon the penultimate turn. These ribs extend strongly from the summit of the whorls to the umbilical chink. Intercostal spaces about twice as broad as the ribs, crossed by fine, incised, spiral lines, of which 7 occur between the shoulder at the summit and the suture on the first and second, 9 upon the third, 15 upon the fourth and the penultimate turn. The spaces separating these spiral striations are about twice as wide as the striations. Sutures strongly constricted. Periphery of the last whorl somewhat inflated, well rounded. Base moderately long, well rounded, narrowly umbilicated, marked by the strong continuations of the axial ribs and fine spiral striations, which become a little closer spaced on the anterior portion than at the periphery. Aperture pear-shaped; posterior angle obtuse; outer lip somewhat sinuous, thick within, sloping to a thin edge; columella slender, curved, reflected, provided with an oblique fold at its insertion; parietal wall covered with a thick callus which gives the peristome a complete aspect.

The type, Cat. No. 249700, U.S.N.M., comes from Port Alfred (Coll. No. 972). It has six postnuclear whorls and measures: Length, 4.4 mm.; diameter, 1.7 mm. Cat. No. 249695, U.S.N.M., contains a young specimen from the same locality (Coll. No. 967).

TURBONILLA (PYRGISCUS), species?

Cat. No. 186851, U.S.N.M., contains a specimen from Port Alfred (Coll. No. 218), which has very strong protractive axial ribs, numerous, finely incised, spiral striations in the intercostal spaces, and a very pronounced plait on the pillar. I refrain from giving it a name until more complete material may be at hand.

TURBONILLA (PYRGISCUS), species?

Cat. No. 186851a, U.S.N.M., contains a badly-worn specimen from Port Alfred (Coll. No. 218a). It is much smaller than the last one referred to, and is probably a new species.

TURBONILLA (PYRGISCUS) TRITONIA, new species.

Plate 19, fig. 4.

Shell very small, slender, elongate-conic, white. Nuclear whorls two and one-half; depressed helicoid, having their axis at a right angle to that of the succeeding turns, in the first of which they are about one-third immersed. Postnuclear whorls slightly rounded, weakly shouldered at the summit; marked by strong, slightly curved, almost vertical axial ribs, of which 16 occur upon the first and second, 18 upon the third and fourth, and 20 upon the penultimate turn. The intercostal spaces, which are about as wide as the ribs, are crossed by 10 equally spaced, narrow, incised, spiral grooves, of which the third one below the summit is about twice as wide as the rest, which are subequal. Periphery of the last whorl well rounded. Base moderately long, well rounded, marked by the continuations of the axial ribs, which extend feebly to the umbilical region and about 15 incised spiral lines, which grow successively weaker and closer spaced from the periphery to the umbilical region. Aperture oval; outer lip thin; inner lip strongly curved and reflected, provided with a strong fold at its insertion; parietal wall covered with a thick callus.

The type and two additional specimens, Cat. No. 187046, U.S.N.M., come from Port Alfred (Coll. No. 584). The type has five and one-half whorls, and measures: Length, 2 mm.; diameter, 0.6 mm. Cat. No. 250370, U.S.N.M., contains two additional specimens from Port Alfred (Coll. No. 1243).

TURBONILLA (PYRGISCUS) ZENOBIA, new species.

Plate 16, fig. 6.

Shell elongate-conic, bluish-white. Nuclear whorls more than two, smooth, forming a depressed helicoid spire, the axis of which is at right angles to that of the succeeding turns, above the first of which the tilted edge of the last two volutions only project. Postnuclear whorls slightly rounded and feebly shouldered at the summit, marked with strong, rounded, sinuous and protractive axial ribs, which extend strongly from the summit of the whorls to the suture. Of these ribs, 16 occur upon the first and second, 18 upon the third to fifth, 20 upon the sixth and seventh, and 22 upon the penultimate turn. Intercostal spaces a little wider than the ribs, marked by well incised, spiral lines which pass over the intercostal spaces and the ribs. Of these lines, 8 appear on the first and second, 10 upon the third, 12 upon the fourth, 15 upon the fifth, 16 upon the sixth, 17 upon the seventh, and 18 upon the penultimate turn. Sutures strongly impressed. Periphery of the last whorl well rounded. Base short, well rounded, marked by 11 slender spiral threads, which are about half as wide as the spaces that separate them and diminish in

The type and another specimen, Cat. No. 227732, U.S.N.M., come from Port Alfred (Coll. No. 827). The type has seven postnuclear whorls, and measures: Length, 3.9 mm.; diameter, 1.1 mm.

TURBONILLA (PYRGISCUS) ATOSSA, new species.

Plate 15, fig. 1.

Shell elongate-conic, bluish-white. Nuclear whorls more than two, smooth, the early portion obliquely immersed in the later. Post-nuclear whorls strongly shouldered at the summit, marked by well-rounded, somewhat retractive, strong, axial ribs, of which 16 occur upon the first, 18 upon the second to fourth, and 20 upon the penultimate turn. These ribs extend strongly from the summit of the whorls to the umbilical chink. Intercostal spaces about twice as broad as the ribs, crossed by fine, incised, spiral lines, of which 7 occur between the shoulder at the summit and the suture on the first and second, 9 upon the third, 15 upon the fourth and the penultimate turn. The spaces separating these spiral striations are about twice as wide as the striations. Sutures strongly constricted. Periphery of the last whorl somewhat inflated, well rounded. Base moderately long, well rounded, narrowly umbilicated, marked by the strong continuations of the axial ribs and fine spiral striations, which become a little closer spaced on the anterior portion than at the periphery. Aperture pear-shaped; posterior angle obtuse; outer lip somewhat sinuous, thick within, sloping to a thin edge; columella slender, curved, reflected, provided with an oblique fold at its insertion; parietal wall covered with a thick callus which gives the peristome a complete aspect.

The type, Cat. No. 249700, U.S.N.M., comes from Port Alfred (Coll. No. 972). It has six postnuclear whorls and measures: Length, 4.4 mm.; diameter, 1.7 mm. Cat. No. 249695, U.S.N.M., contains a young specimen from the same locality (Coll. No. 967).

TURBONILLA (PYRGISCUS), species?

Cat. No. 186851, U.S.N.M., contains a specimen from Port Alfred (Coll. No. 218), which has very strong protractive axial ribs, numerous, finely incised, spiral striations in the intercostal spaces, and a very pronounced plait on the pillar. I refrain from giving it a name until more complete material may be at hand.

TURBONILLA (PYRGISCUS), species?

Cat. No. 186851a, U.S.N.M., contains a badly-worn specimen of Port Alfred (Coll. No. 218a). It is much smaller than the last referred to, and is probably a new species.

t, marked by rather strong, somewhat curved, slightly protruding axial ribs, of which 16 occur upon the first, 18 upon the second, 20 upon the third to fifth, 22 upon the sixth, and 24 upon the seventh turn. These ribs are about as wide as the spaces between them, and render the summit of the whorls crenulated. Intercostal spaces crossed by 14 slender spiral threads, of which the 9 nearest the suture are equal and equally spaced, while the 3 remaining nearest the summit are much closer spaced. Sutures strongly impressed. Periphery of the last whorl well rounded. Base moderately rounded, well rounded, marked by the continuation of the axial ribs, which extend to the umbilical chink, and about 25 spiral lirations, which become more closely spaced and less strongly developed from the periphery to the umbilical area. The intercostal spaces at the periphery are free from spiral sculpture and cause this to appear as a series of broad, strongly impressed pits. Aperture oval; posterior angle obtuse; outer lip rather thick; inner lip curved and decidedly thickened, provided with a fold at its insertion; parietal wall covered with a moderately thick callus.

The type and another specimen, Cat. No. 249697, U.S.N.M., come from Port Alfred (Coll. No. 969). The type has eight postnuclear lirations and measures: Length, 4.6 mm.; diameter, 1.3 mm.

TURBONILLA (PYRGISCUS) APSA, new species.

Plate 16, fig. 4.

Elongate-conic, thin, semitranslucent, bluish white. Nuclear sculpture at least two, rather large, depressed helicoid, well rounded, the first half immersed in the first of the succeeding turns. Postnuclear sculpture moderately well rounded, shouldered at the summit, which is strongly exerted, and marked by obsolete axial ribs which are best seen on the early turns. Of these ribs about 18 are indicated on the second, 22 upon the third and fourth, 28 upon the fifth, 32 upon the sixth and penultimate turns. Intercostal spaces are not visible, the ribs appearing a little more opaque than the spaces between them. In addition to the axial sculpture, the whorls are marked between the sutures by about eleven slender spiral striations which are of somewhat varying strength and spacing, the last immediately below the summit being free of spiral sculpture. Sutures well impressed. Periphery well rounded. Base well rounded, marked by about 16 slender spiral lirations which are at first rather strong and grow weaker and closer spaced towards the umbilical chink, where they are very densely massed. Aperture oval; posterior angle acute; outer lip thin; inner lip strongly thickened, slightly curved, provided with a weak fold at its insertion. Peritreme with a thick callus which renders the peritreme

size consecutively from the periphery to the umbilical chink. Aperture subquadrate; posterior angle obtuse; outer lip thin, showing the external sculpture within; columella short, very oblique, slightly revolute, provided with an obsolete fold at its insertion; parietal wall covered with a thin callus.

The type and another specimen, Cat. No. 249701, U.S.N.M., come from Port Alfred (Coll. No. 973). The type has nine whorls and measures: Length, 4 mm.; diameter, 1 mm. Cat. No. 249699, U.S.N.M., contains two additional specimens from the same locality. (Coll. No. 971).

TURBONILLA (PYRGISCUS) TINCTA Sowerby.

Cat. No. 186844, U.S.N.M., contains three specimens from Port Alfred (Coll. No. 211).

TURBONILLA (PYRGISCUS) MAIA, new species.

Plate 14, fig. 3.

Shell elongate-conic, milk white. Nuclear whorls very small, at least two having their axis at a right angle to that of the succeeding turns, in the first of which they are about one-third immersed. Post-nuclear whorls inflated, strongly rounded, marked by narrow scalariform, slightly protractive axial ribs, of which 16 occur upon the first and second, 18 upon the third to sixth, 20 upon the seventh, and 26 upon the penultimate turn. Upon this they become inflated and somewhat irregular; intercostal spaces about twice, to two and one-half times, as wide as the ribs, marked by strongly incised, spiral lines, of which 5 occur upon the first and second, 6 upon the third, 7 upon the fourth, and 8 upon the fifth and sixth, 13 upon the seventh, while upon the penultimate turn they become exceedingly irregular, both as to width, number, and spacing. Sutures strongly constricted. Periphery of the last whorl inflated, well rounded. Base rather short, well rounded, narrowly umbilicated, marked by the feeble continuations of the axial ribs and numerous spiral striations. Aperture oval; posterior angle obtuse; outer lip thin; inner lip decidedly curved; slightly reflected, free; parietal wall glazed with a thin callus.

The type, Cat. No. 187049, U.S.N.M., comes from Port Alfred (Coll. No. 587). It has eight and one-half post-nuclear whorls, and measures: Length, 7.1 mm.; diameter, 2.3 mm. Two additional lots are in the collection of the U.S. National Museum, all from Port Alfred. Cat. No. 249698, one specimen (Coll. No. 970). Cat. No. 250373, the tip of a young specimen (Coll. No. 1246).

TURBONILLA (PYRGISCUS) TEFUNTA, new species.

Plate 15, fig. 2.

Shell elongate-conic, milk white, with a narrow pale yellow band a little posterior to the middle on each whorl. Nuclear whorls decolled. Postnuclear whorls slightly rounded, feebly shouldered at the

summit, marked by rather strong, somewhat curved, slightly protractive axial ribs, of which 16 occur upon the first, 18 upon the second, 20 upon the third to fifth, 22 upon the sixth, and 24 upon the penultimate turn. These ribs are about as wide as the spaces that separate them, and render the summit of the whorls crenulated. Intercostal spaces crossed by 14 slender spiral threads, of which the 9 above the suture are equal and equally spaced, while the 3 remaining ones near the summit are much closer spaced. Sutures strongly marked. Periphery of the last whorl well rounded. Base moderately long, well rounded, marked by the continuation of the axial ribs, which extend to the umbilical chink, and about 25 spiral lirations, which become more closely spaced and less strongly developed from the periphery to the umbilical area. The intercostal spaces at the periphery are free from spiral sculpture and cause this to appear as a series of broad, strongly impressed pits. Aperture oval; posterior angle obtuse; outer lip rather thick; inner lip curved and decidedly reflected, provided with a fold at its insertion; parietal wall covered by a moderately thick callus.

The type and another specimen, Cat. No. 249697, U.S.N.M., come from Port Alfred (Coll. No. 969). The type has eight postnuclear whorls, and measures: Length, 4.6 mm.; diameter, 1.3 mm.

TURBONILLA (PYRGISCUS) APSA, new species.

Plate 16, fig. 4.

Shell elongate-conic, thin, semitranslucent, bluish white. Nuclear whorls at least two, rather large, depressed helicoid, well rounded, about half immersed in the first of the succeeding turns. Postnuclear whorls moderately well rounded, shouldered at the summit, which is slightly exserted, and marked by obsolete axial ribs which are best expressed on the early turns. Of these ribs about 18 are indicated upon the second, 22 upon the third and fourth, 28 upon the fifth, and 20 upon the sixth and penultimate turns. Intercostal spaces scarcely visible, the ribs appearing a little more opaque than the spaces between them. In addition to the axial sculpture, the whorls are marked between the sutures by about eleven slender spiral striations which are of somewhat varying strength and spacing, the region immediately below the summit being free of spiral sculpture. Sutures well impressed. Periphery well rounded. Base well rounded, marked by about 16 slender spiral lirations which are strongest near the periphery and grow weaker and closer spaced towards the umbilical chink, where they are very densely massed. Aperture oval; posterior angle acute; outer lip thin; inner lip strongly curved, slightly reflected, provided with a weak fold at its insertion. Parietal wall covered with a thick callus which renders the peritreme almost complete.

The type and another specimen, Cat. No. 249706, U.S.N.M., come from Port Alfred (Coll. No. 78). The type has eight postnuclear whorls, and measures: Length, 4.9 mm.; diameter 1.5 mm.

TURBONILLA (PYRGISCUS), species?

Cat. No. 249694, U.S.N.M., contains two worn specimens from Port Alfred, too poor to determine (Coll. No. 966).

TURBONILLA (DUNKERIA) TEGULATA Sowerby.

Cat. No. 186846, U.S.N.M., contains three specimens of this species from Port Alfred (Coll. No. 213).

TURBONILLA (CINGULINA) TRACHEALIS Gould.

Plate 17, fig. 1.

Chemnitzia (Polyspirella) trachealis GOULD, Proc. Bost. Soc. Nat. Hist., vol. 7, p. 407, 1861.

Shell elongate-conic, yellowish-white. Nuclear whorls large, planorboid, well rounded, smooth, obliquely immersed in the first of the succeeding turns, above which only the tilted edge of the last two volutions projects. Postnuclear whorls moderately rounded, shouldered at the summit, marked by three strong spiral cords which slope abruptly posteriorly and gently anteriorly. These cords are about twice as wide as the spaces that separate them. Beginning with the third to last turn, the suture falls gradually more and more anterior to the periphery, exposing a portion of the base, which appears as a flattened band above the suture. In addition to the spiral cords, the whorls are marked by numerous, slender, raised, axial threads in the depressed spaces between the cords. These threads are about one-fourth as wide as the spaces that separate them. Suture scarcely differentiated from the other grooves. Periphery of the last whorl well rounded. Base rather short, well rounded, marked by incremental lines and exceedingly fine, spiral striations. Aperture broadly ovate; posterior angle acute; outer lip thin, showing the external sculpture within; columella somewhat twisted, provided with an obsolete fold at its insertion.

Gould's type, Cat. No. 165a, U.S.N.M., which was collected by William Stimpson on the North Pacific exploring expedition at Simon's Bay, Cape of Good Hope, has 9 postnuclear whorls and measures: Length, 5.7 mm.; diameter, 2 mm. A specimen having 12 whorls but minus the nucleus measures: Length, 12.2 mm.; diameter, 2.5 mm. Four additional lots of this species are in the collection of the United States National Museum from South Africa as follows: Cat. No. 250398a, four specimens (Coll. No. 1271a). Cat. No. 250399, three specimens (Coll. No. 1272). Cat. No. 187048, one specimen (Coll. No. 586). Cat. No. 187047, three specimens (Coll. No. 585).

TURBONILLA (CINGULINA) AGLAIA, new species.

Plate 17, fig. 3.

Shell elongate-conic, subdiaphanous, bluish-white. Nuclear whorls small, at least two; depressed helicoid, obliquely one-third immersed in the first of the succeeding turns. Postnuclear whorls moderately rounded, marked by three strong spiral striations between the sutures on the early whorls, while on the later ones the peripheral cord becomes completely exposed in the suture, giving these whorls four spiral cords. These spiral cords are truncated posteriorly and slope gently anteriorly. They are a little wider than the grooves that separate them. The grooves are crossed by numerous, very slender, somewhat protractive axial riblets. Sutures scarcely differentiated from the spiral grooves. Periphery of the last whorl bounded posteriorly by a spiral groove; anteriorly there is no limiting groove to denote the peripheral cord, which is apparent in the suture on the preceding turns, the periphery here passing evenly into a short, well-rounded base, which is marked by exceedingly fine, spiral striations and lines of growth. Aperture subquadrate; posterior angle obtuse; outer lip thin, showing the external sculpture within, rendered wavy at the edge by the external sculpture; inner lip decidedly curved and slightly reflected, provided with a weak fold at its insertion; parietal wall glazed with a thin callus.

The type and two specimens, Cat. No. 186850, U.S.N.M., come from Port Alfred (Coll. No. 217). The type has eight and one-half postnuclear whorls, and measures: Length, 5.3 mm.; diameter, 1.5 mm. Cat. No. 250398, U.S.N.M., contains two additional specimens from Port Alfred (Coll. No. 1271).

TURBONILLA (CINGULINA) PELLUCIDA Sowerby.

Cat. No. 186854, U.S.N.M., contains three specimens of this species, which was described as *Cioniscus pellucidus* Sowerby, from Port Alfred (Coll. No. 222).

TURBONILLA (CINGULINA) CALLISTA, new species.

Plate 17, fig. 2.

Shell elongate-conic, very slender, white. Nuclear whorls at least two, small, depressed helicoid, obliquely one-third immersed in the first of the succeeding turns. Postnuclear whorls well rounded, marked between the sutures by three very strong, incised, spiral grooves, of which one is immediately below the summit, the second on the middle of the whorls, and the third about as far posterior to the suture as the first is anterior to the summit. The axial sculpture consists of vertical incremental lines only. Periphery and base of the last whorl well rounded, marked by incremental lines only. Aperture oval; posterior angle acute; outer lip thin, showing the

external sculpture within; inner lip very slender, decidedly curved and reflected; free only at the extreme anterior portion, the rest appressed; parietal wall glazed with a thin callus.

The type and two specimens, Cat. No. 187054, U.S.N.M., come from Port Alfred (Coll. No. 592). The type has nine postnuclear whorls, and measures: Length, 4.2 mm.; diameter, 1 mm.

TURBONILLA (CARELIOPSIS) CARIFA, new species.

Plate 20, fig. 4.

Shell small, elongate-conic, semitranslucent, bluish-white, nuclear whorls, at least two, large and smooth, forming a depressed helicoid spire, which is a little more than half obliquely immersed in the first of the succeeding turns. Postnuclear whorls well rounded, feebly shouldered at the summit, marked by quite regular, equal and equally spaced, fine spiral lirations, of which 9 occur upon the first and second, 10 upon the third, and 11 upon the penultimate turn between the sutures. Suture decidedly constricted. Periphery of the last whorl well rounded. Base moderately long, very narrowly umbilicated, a little less strongly rounded than the space between the sutures, marked by about 11 spiral lirations of about the same strength and spacing as those occurring on the spire. In addition to the spiral sculpture, the whorls are marked by exceedingly fine, decidedly retractorily slanting lines of growth. Aperture moderately large, oval; posterior angle obtuse; outer lip thin, showing the external sculpture within; inner lip strongly curved, very slender, reflected over and attached to the body whorl, except the extreme anterior portion, which is free; parietal wall covered by a thick callus.

The type, and another specimen, Cat. No. 250390, U.S.N.M., comes from Port Alfred (Coll. No. 1263). The type has five postnuclear whorls, and measures: Length, 2.1 mm.; diameter, 0.7 mm.

TURBONILLA (MORMULA) CIFARA, new species.

Plate 16, fig. 5.

Shell large and robust, elongate-conic, bluish white. Nuclear whorls decollated. Postnuclear whorls slightly rounded, roundly shouldered at the summit and weakly contracted at the suture, marked by rather strong, somewhat irregular, slightly retractive, axial ribs and an occasional varix, marking the fusion of a number of ribs. The varices are irregularly disposed. Of the axial ribs, 22 occur upon the first and second, and 20 upon all the remaining turns but the penultimate, which has 22; on this turn they are rather irregularly disposed and less strongly developed. In addition to the axial ribs the whorls are crossed by weakly incised spiral lines, which are of somewhat varying strength. There are probably 50 of these between the sutures. These lines and the feeble lines of growth between the

ribs lend the whorls a cloth-like texture. Suture well impressed. Periphery of the last whorl feebly angulated. Base short, moderately rounded, marked by the continuation of the axial ribs and spiral lirations, the latter of varying strength. Aperture irregularly oval; posterior angle obtuse; outer lip moderately thin, showing the external sculpture within; inner lip very oblique, almost straight, reflected over and appressed to the body whorl, except at the extreme anterior tip, which is free. The columella is provided with a feeble fold at its insertion. Parietal wall glazed with a thin callus.

The type, Cat. No. 249715, U.S.N.M., comes from Port Alfred (Coll. No. 987). It has nine postnuclear whorls, and measures: Length, 15 mm.; diameter, 4.7 mm.

Two additional specimens of this species come from Port Alfred. They are listed as Cat. No. 186842, U.S.N.M. (Coll. No. 209), and Cat. No. 249702, U.S.N.M., (Coll. No. 974).

TURBONILLA (MORMULA) DECORA Smith.

Cat. No. 186849, U.S.N.M., contains a specimen of this species from Port Alfred (Coll. No. 216). Another specimen from the same locality is listed as Cat. No. 250377, U.S.N.M. (Coll. 1250).

TURBONILLA (PERISTICHIA) BATHYRAPHE Sowerby.

Cat. No. 186848, U.S.N.M., contains one specimen of this species from Port Alfred (Coll. No. 215).

Genus ODOSTOMIA Fleming.

ODOSTOMIA (ODOSTOMELLA) FARICA, new species.

Plate 18, fig. 4.

Shell small, elongate-ovate, milk white, with three narrow chestnut bands, the first of which encircles the posterior fourth of the space between the sutures; the second is somewhat anterior to the periphery, while the third is about one-half of the distance of the space between the anterior extremity of the base and the periphery, posterior to the anterior extremity. Nuclear whorls small, polished, deeply immersed in the first of the succeeding turns, above which the tilted edge of the last volution only projects. Postnuclear whorls well rounded, narrowly shouldered at the summit, marked by slender, almost vertical, axial riblets, which are about two-thirds as wide as the spaces that separate them. Of these riblets, 22 occur upon the second, 24 upon the third, and 26 upon the penultimate turn. Suture strongly constricted. Periphery of the last whorl well rounded. Base moderately well rounded, marked by the feeble continuations of the axial ribs, which extend to the umbilical chink. Aperture oval; posterior angle obtuse; outer lip thin, showing the external sculpture within; inner lip slightly curved, reflected, and appressed to the

preceding turn for half its length; parietal wall glazed with a thin callus.

The type, Cat. No. 250369, U.S.N.M., comes from Port Alfred (Coll. No. 1242), has four postnuclear whorls, and measures: Length, 1.5 mm.; diameter, 0.6 mm.

ODOSTOMIA (EGILINA) TURTONI, new species.

Plate 19, fig. 3.

Shell small, elongate-conic, milk white. Nuclear whorls, at least two, deeply, obliquely, immersed in the first of the succeeding turns. Postnuclear whorls moderately rounded, feebly shouldered at the summit; marked by very regular, somewhat sinuous, slightly protractive axial ribs, of which 24 occur upon the first, 26 upon the second and third, and about 40 upon the last turn. These ribs are separated by well-impressed intercostal spaces which are about equal to the axial ribs in width. In addition to the spiral sculpture the whorls are marked between the sutures by a strong spiral cord which adjoins the suture. The summit of the whorls is rendered slightly crenulated by the curving of the ribs. Sutures strongly impressed; periphery of the last whorl marked by a narrow sulcus, which is crossed by the continuations of the axial ribs; base short, moderately umbilicated, marked by feeble, thread-like continuations of the axial ribs and six low, well-rounded, weak spiral threads, which diminish greatly in size and spacing from the periphery to the umbilical area, where they are quite obsolete. Aperture quite large, oval; posterior angle acute; outer lip thin, showing the external sculpture within; inner lip strongly curved and slightly reflected; parietal wall covered by thick callus.

The type and three specimens, Cat. No. 227733, U.S.N.M., (Coll. No. 828), come from Port Alfred. The type has almost five postnuclear whorls, and measures: Length, 2 mm.; diameter, 0.9 mm.

ODOSTOMIA (PYRGULINA) ARFICA, new species.

Plate 18, fig. 7.

Shell elongate-ovate, rather solid, bluish white. Nuclear whorls decollated. Postnuclear whorls well rounded, strongly shouldered at the summit, marked by stout, well-rounded, somewhat sinuous, decidedly protractive, axial ribs, which are about as wide as the spaces that separate them. Of these ribs, 14 occur upon the first, 16 upon the second, 18 upon the third, and 22 upon the penultimate turn. These ribs render the summit of the whorls decidedly crenulated. In addition to the ribs the intercostal spaces are marked between the sutures by exceedingly fine, closely spaced, spiral striations, of which about 35 are present upon the third turn. Sutures strongly impressed. Periphery of the last whorl well rounded. Base moder-

ately long, narrowly umbilicated, well rounded, marked by the feeble continuation of the axial ribs, and numerous spiral striations. Aperture oval; posterior angle obtuse; outer lip rather thick; inner lip decidedly curved, and somewhat reflected, provided with a very strong, oblique fold at its insertion; parietal wall covered by a thick callus, which renders the peritreme practically complete.

The type, and another specimen, Cat. No. 249693, U.S.N.M., come from Port Alfred (Coll. No. 965); the type has five postnuclear whorls, and measures: Length, 4 mm.; diameter, 1.9 mm.

ODOSTOMIA (MIRALDA) AGANA, new species.

Plate 19, fig. 8.

Shell conic, white. Nuclear whorls, at least two, deeply, obliquely immersed in the first of the succeeding turns, above which the tilted edge of the last volution projects. Postnuclear whorls moderately rounded, shouldered at the summit, ornamented with slender, protractive, axial ribs, of which 16 occur upon the first and second, 18 upon the third, and 22 upon the penultimate turn. These ribs extend prominently to the summit of the whorls, which they render crenulated. In addition to the axial sculpture the whorls are marked by two prominent spiral cords between the sutures, of which the first occupies the middle of the turns, while the second is halfway between this and the suture. The intersections of the axial ribs and the spiral cords form well-rounded nodules. Periphery of the last whorl marked by a sulcus. Sutures strongly constricted. Base moderately long, somewhat produced, narrowly umbilicated, provided with a strong spiral cord, which bounds the peripheral sulcus. The anterior part of the base is smooth, excepting minute lines of growth, which are also apparent on the spire. Aperture oval; outer lip very thin, showing the external sculpture within, decidedly sinuous at the edge; inner lip strongly curved, slightly reflected, free, provided with a strong fold at its insertion; parietal wall glazed with a thin callus.

The type, Cat. No. 186848a, U.S.N.M., comes from Port Alfred (Coll. No. 215a). It has 5 postnuclear whorls, and measures: Length, 2.4 mm.; diameter, 1 mm. Cat. No. 227728, U.S.N.M., contains three specimens from the same locality (Coll. No. 823).

ODOSTOMIA (MENESTHO) CARIFA, new species.

Plate 18, fig. 5.

Shell very small, subcylindric, cream yellow. Nuclear whorls well rounded, smooth, deeply, obliquely inserted in the first of the succeeding turns, above which the tilted edge of the last volution only projects. Postnuclear whorls strongly rounded, appressed at the summit, marked by two strongly incised, spiral grooves, of which the first is

situated at the anterior extremity of the posterior fourth, between the sutures, while the second is about as far posterior to the suture. The posterior of these two grooves is bounded posteriorly by a slender raised cord. In addition to this spiral sculpture the whorls are marked by numerous fine spiral striations and decidedly retractive lines of growth. The latter assume somewhat the appearance of feeble riblets between the slender cord and the summit. Sutures strongly constricted. Periphery of the last whorl well rounded. Base moderately long, well rounded, with a very fine umbilical perforation, marked by the continuation of the lines of growth and numerous fine spiral striations, which are a little stronger than those on the spire. Aperture broadly oval; posterior angle very obtuse; outer lip very oblique, thin; inner lip very strongly curved and appressed to the preceding turn; except the extreme anterior portion, which is free, parietal wall glazed with a thin callus.

The type, Cat. No. 250391, U.S.N.M., comes from Port Alfred (Col. No. 1264), has four postnuclear turns, and measures: Length, 1.5 mm.; diameter, 0.7 mm.

ODOSTOMIA (MENESTHO) RIFACA, new species.

Plate 18, fig. 3.

Shell very elongate-ovate, milk white. Nuclear whorls well rounded, smooth, immersed in the first of the succeeding turns, above which the tilted edge of the last volution only projects. Postnuclear whorls moderately rounded, having a strongly impressed spiral groove a little below the summit, which causes this to appear as a well-rounded spiral cord. The rest of the surface between the sutures is marked by numerous very fine spiral striations, and exceedingly fine axial lines of growth. Sutures strongly constricted. Periphery of the last whorl somewhat inflated, well rounded. Base slightly attenuated, very narrowly umbilicated, well rounded, marked by the continuation of the lines of growth and spiral striations which equal those of the spire in strength and spacing. Aperture irregularly ovate; posterior angle acute; outer lip thin, oblique; inner lip decidedly curved, reflected over and appressed to the preceding turn, the extreme anterior tip only being free. A strong oblique fold marks the insertion of the columella. Parietal wall glazed by a thin callus.

The type, Cat. No. 250365, U.S.N.M., comes from Port Alfred (Col. No. 1238). It has five postnuclear whorls, and measures: Length, 1.9 mm.; diameter, 0.9 mm.

ODOSTOMIA (MENESTHO) FICARA, new species.

Plate 16, fig. 1.

Shell broadly elongate-conic, rather thick, bluish white. Nuclear whorls small, deeply, obliquely immersed in the first of the postnuclear turns, above which a part of the last two volutions project. Postnuc-

clear turns well rounded, ornamented with strong spiral keels, of which two occur upon the first and second, while upon the third the anterior one is divided by a slender incised line which gradually increases in strength on the succeeding turns, splitting this cord into two equal and equally strong cords equaling the posterior one, on the last turn. On the last two turns the infraperipheral cord makes its appearance in the suture. We have, therefore, four cords shown between the sutures on the last turn. Summit of the whorls tabulatedly shouldered, the first cord beginning at the angle of the shoulder. The grooves separating the spiral cords are strongly impressed. The one immediately posterior to the supraparipheral cord is a little stronger than the rest. In addition to the spiral sculpture the whorls are marked by feeble lines of growth on the spire, which appear strongest in the spiral grooves. Sutures strongly constricted. Periphery of the last whorl marked by a spiral sulcus. Base moderately long, well rounded, very narrowly umbilicated, marked by 11 spiral cords, the five anterior to the periphery being much stronger than the six remaining, which are very fine. Aperture oval; posterior angle obtuse; outer lip thin, rendered sinuous by the spiral sculpture, showing the external sculpture within; inner lip short, strongly curved, reflected and appressed to the preceding turn, provided with a very strong oblique fold opposite the umbilical chink; parietal wall covered by a strong callus.

The type, Cat. No. 271615, U.S.N.M., comes from Port Alfred (Coll. No. 1599). It has six postnuclear whorls, and measures: Length, 3.3 mm.; diameter, 1.5 mm.

ODOSTOMIA (EVALEA) LUCIDA Sowerby.

Cat. No. 186853, U.S.N.M., contains two specimens from Port Alfred (Coll. No. 220).

ODOSTOMIA (EVALEA) LAVERTINAE Smith.

Cat. No. 186852, U.S.N.M., contains six specimens from Port Alfred (Coll. No. 219).

We have seen 33 additional specimens from Port Alfred in Colonel Turton's collection (Coll. No. 1589).

ODOSTOMIA (EVALEA) AETHRA, new species.

Plate 19, fig. 7.

Shell elongate-conic, white. Nuclear whorls deeply immersed in the first of the succeeding turns, above which a very small portion of the tilted edge of the last volution only projects. Postnuclear whorls well rounded; feebly shouldered at the summit; marked with fine, incremental lines, and exceedingly fine, microscopic, spiral striations. Periphery of the last whorl somewhat inflated, feebly

angulated. Base rather short, narrowly umbilicated, well rounded, marked like the spire. Aperture oval; posterior angle obtuse; outer lip thin; inner lip oblique, slightly curved, appressed, provided with a strong fold at its insertion; parietal wall covered with a thick callus.

The type and another specimen, Cat. No. 186852a, U.S.N.M., come from Port Alfred (Coll. No. 219). The type has five and one-half postnuclear whorls, and measures: Length, 3 mm.; diameter, 1.5 mm.

ODOSTOMIA (EVALEA) GEA, new species.

Plate 19, fig. 1.

Shell small, elongate-conic, white. Nuclear whorls deeply, obliquely immersed in the first of the succeeding turns, giving the shell a truncated appearance. Postnuclear whorls weakly rounded, very strongly shouldered at the summit, marked by vertical lines of growth, and exceedingly fine, microscopic spiral striations. Sutures strongly impressed. Periphery of the last whorl somewhat inflated, feebly angulated. Base well rounded, strongly umbilicated, marked like the spire. Aperture oval; posterior angle acute; outer lip thin, reinforced within by six equal and equally spaced slender, spiral lirations; inner lip almost vertical, slightly curved, feebly reflected, provided with a strong fold at its insertion; parietal wall glazed with a thin callus.

The type and another specimen, Cat. No. 187073, U.S.N.M., come from Port Alfred (Coll. No. 612). The type has almost six postnuclear whorls, and measures: Length, 2.6 mm.; diameter, 1.2 mm.

ODOSTOMIA (EVALEA) CIFARA, new species.

Plate 18, fig. 8.

Shell elongate-conic, thin, semitranslucent, strongly umbilicated, bluish white. Nuclear whorls small, immersed in the first of the succeeding turns, above which the tilted edge of the last volution only projects. Postnuclear whorls moderately well rounded, narrowly, slopingly shouldered at the summit, marked by numerous, very fine, spiral lines, and very slender, almost vertical lines of growth. The limit at the summit of the interior chamber of the whorls shines through the texture of the shell, and causes this to appear as if it had a double suture. Periphery of the last whorl somewhat inflated, strongly rounded. Base rather short, inflated, quite markedly umbilicated, marked like the spire. Aperture rather large, oval; posterior angle acute; outer lip thin; inner lip strongly curved, reflected but free, bearing a strong oblique fold opposite the umbilicus. Parietal wall covered by a moderately thick callus.

The type and two specimens, Cat. No. 250362, U.S.N.M., come from Port Alfred (Coll. No. 1235). The type has six postnuclear whorls, and measures: Length, 3.8 mm.; diameter, 1.8 mm.

We have seen three additional lots of this species which are in Colonel Turton's collection, all from Port Alfred: 29 specimens (Coll. No. 1589); 33 specimens (Coll. No. 1590); 2 specimens (Coll. No. 1599).

ODOSTOMIA (EVALEA) ACRIFA, new species.

Plate 16, fig. 3.

Shell elongate-conic, bluish white, with five equal and equally spaced, narrow, yellowish, spiral bands, which correspond with internal lirations. Nuclear whorls depressed helicoid, obliquely immersed in the first of the succeeding turns, above which a very small portion of the tilted edge of the last volution only projects. Postnuclear whorls quite strongly rounded, narrowly shouldered at the summit, marked by rather strong lines of growth, which have a tendency on the later whorls to divide the surface of the shell into riblets at the shoulder, and numerous, very fine, spiral striations. The posterior limit of the interior of each whorl is seen through the texture of the shell and gives this the appearance of having a double suture. Sutures strongly constricted. Periphery of the last whorl inflated and strongly rounded. Base short, conspicuously umbilicated, inflated, well rounded, marked like the spire by lines of growth and fine spiral lines. Aperture broadly ovate; posterior angle acute; outer lip thin, showing five lirations within, between the posterior angle and the periphery; inner lip curved, slightly reflected but distinct, provided with a strong oblique fold opposite the umbilicus; parietal wall covered by a moderately thick callus.

The type, Cat. No. 250364, U.S.N.M., comes from Port Alfred (Coll. No. 1237). It has six postnuclear whorls, and measures: Length, 3.4 mm.; diameter, 1.4 mm.

ODOSTOMIA (ODOSTOMIA) IRAFCA, new species.

Plate 18, fig. 2.

Shell minute, translucent, yellowish white. Nuclear whorls deeply immersed in the first of the succeeding turns, above which the tilted edge of the last volution only projects. Postnuclear whorls inflated, strongly rounded, appressed at the summit, marked by rather coarse lines of growth. Sutures strongly constricted. Periphery of the last whorl inflated and also well rounded. Base somewhat attenuated, very slightly umbilicated, marked like the spire. Aperture broadly oval; outer lip thin, somewhat effuse; inner lip strongly curved, somewhat twisted, and strongly reflected, provided with a strong oblique fold opposite the umbilical chink; parietal wall covered with a thin callus.

The type and two specimens, Cat. No. 250363, U.S.N.M., come from Port Alfred (Coll. No. 1236). The type has four postnuclear whorls, and measures: Length, 1.5 mm.; diameter, 0.7 mm.

ODOSTOMIA (ODOSTOMIA) ICAFRA, new species.

Plate 18, fig. 1.

Shell small, quite regularly conic, semitranslucent, bluish white. Nuclear whorls obliquely immersed in the first of the succeeding turns, above which the tilted edge of the last volution only projects. Post-nuclear whorls slightly rounded, narrowly shouldered at the summit, marked by exceedingly fine lines of growth. The posterior limit of the interior of the whorl shines through the substance of the shell, and causes the whorls to appear as if they had a double suture. Sutures feebly impressed. Periphery of the last whorl well rounded. Base slightly attenuated, well rounded, very narrowly umbilicated, marked by fine lines of growth only. Aperture oval; posterior angle acute; outer lip thin; inner lip strongly curved and reflected, provided with a strong oblique fold at its insertion; parietal wall covered by a thin callus.

The type, Cat. No. 250366, U.S.N.M., comes from Port Alfred (Coll. No. 1239). It has six postnuclear whorls, and measures: Length, 2.4 mm.; diameter, 1.2 mm.

Family ATLANTIDAE.

Genus ATLANTA Lesueur.

ATLANTA PERONII Lesueur.

One specimen, Cat. No. 250549, U.S.N.M., from Port Alfred (Coll. No. 1422). Cat. No. 250551, U.S.N.M., contains two young specimens from the same locality (Coll. No. 1424).

Family CYMATIDAE.

Genus BURSA Bolten.

BURSA (MARSUPINA), species?

Cat. No. 186790, U.S.N.M., contains a specimen from Port Alfred (Coll. No. 153) which resembles *Bursa granifer* of Lamarck, a Philippine species. It is very likely the shell that has been reported from South Africa under that name. Unfortunately the specimen before me is not perfect enough to be properly diagnosed. Cat. No. 250439, U.S.N.M., contains another young specimen from Port Alfred (Coll. No. 1312.)

BURSA (MARSUPINA), species?

Cat. No. 187022, U.S.N.M., contains a specimen from Port Alfred (Coll. No. 557) which resembles *Bursa semigranosa* from the Philippines but is not that species. It is also too poor to permit of proper

Genus EUGYRINA Dall.

EUGYRINA GEMNIFERA Euthyme.

Plate 9, figs. 1, 4.

Cat. No. 227776, U.S.N.M., two specimens from Port Alfred (Coll. No. 871). I have figured one of these for comparison with the subspecies described below. Cat. No. 187023, U.S.N.M., contains another specimen from the same locality (Coll. No. 558). Cat. No. 186705, U.S.N.M., a young tip from the same locality (Coll. No. 65a). Cat. No. 186787, U.S.N.M., contains one specimen from the same place (Coll. No. 148.)

EUGYRINA GEMNIFERA LEPTA, new subspecies.

Plate 8, figs. 1, 4.

Shell similar to *E. gemnifera* but narrower and much lighter in weight. The sculpture is decidedly reduced. The tubercles are much more numerous and much less strongly defined than in *E. gemnifera*, there being 12 on the last volution of typical *gemnifera* while *lepta* has 20 and 14 on the whorl preceding to 22 in *lepta*. In fact, the entire sculpture is much finer in *lepta* than in *gemnifera*.

Cat. No. 227777, U.S.N.M., contains the type and another specimen from Port Alfred (Coll. No. 872) and Cat. No. 187024, U.S.N.M., contains one specimen from the same locality (Coll. No. 559). The type has lost the tip, the seven whorls remaining measure: Length, 84.2 mm.; greater diameter, 46.3 mm.

Genus ARGOBUCCINUM Mörch.

ARGOBUCCINUM ARGUS Gmelin.

Cat. No. 91, U.S.N.M., one specimen collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. Cat. No. 16920, U.S.N.M., two from Cape of Good Hope. Cat. No. 125376, U.S.N.M., two from Cape Town, collected by the U. S. Eclipse Expedition in 1890. Cat. No. 227775, U.S.N.M., one specimen from Port Alfred (Coll. No. 870).

ARGOBUCCINUM, species?

Cat. No. 97, U.S.N.M., a fragment of a large specimen embracing the aperture and part of the pillar, collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay.

Genus CYMATIUM Bolten.

CYMATIUM DOLIARIUM Lamarck.

Cat. No. 106, U.S.N.M., two specimens collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. Cat. No. 88628, U.S.N.M., two from Cape of Good Hope. Cat. No. 186788, U.S.N.M., two from Port Alfred (Coll. No. 149).

bands posteriorly, and half as wide anteriorly. They are of the same color as the interior of the aperture, while the dark areas are yellowish brown. The outer edge of the columellar callus is also smokily tinted.

NYCTILOCHUS, species ?

Cat. No. 250437, U.S.N.M., contains a ponderous species from Port Alfred, which is too badly worn to be properly identified. (Coll. No. 1310.)

Genus CRYOTRITONIUM Martens.

CRYOTRITONIUM MURRAYI Smith.

Cat. No. 206005, U.S.N.M., one specimen from Agulhas Bank, South Africa.

Genus ASPELLA Mörch.

ASPELLA ANCEPS Lamarck ?

Cat. No. 186791, U.S.N.M., two specimens from Port Alfred (Coll. No. 154). These are not like our *A. anceps* Lamarck from the west coast of America, the type locality, but the specimens before us are so poor to be properly diagnosed, so I let them stand under the name under which they have appeared in the past from South Africa.

NEPIONIC SHELLS.

Cat. No. 249727, U.S.N.M., contains three nepionic shells belonging to the Cymatiidae, from Port Alfred (Coll. No. 999).

Family CASSIDIDAE.

Genus CASSIS Lamarck.

CASSIS ACHATINA Lamarck.

Cat. No. 43078, U.S.N.M., one from Cape of Good Hope. Cat. No. 77298, U.S.N.M., two from the same locality. Cat. No. 97976, U.S.N.M., eight from Kleinemonde, Albany. Cat. No. 186792, U.S.N.M., one from Port Alfred (Coll. No. 155).

CASSIS ZEALANICA Lamarck.

Cat. No. 18400a, U.S.N.M., one from Cape of Good Hope. Cat. No. 187025, U.S.N.M., one from Port Alfred (Coll. No. 561). Cat. No. 227778, U.S.N.M., one specimen from the same place (Coll. No. 873.)

CASSIS PYRUM Lamarck.

Cat. No. 95, U.S.N.M., one specimen collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. Cat. No. 18400, U.S.N.M., one from Cape of Good Hope. Cat. No. 18802, U.S.N.M., one from Port Elizabeth.

Family DOLIIDAE.

Genus DOLIUM Lamarck.

DOLIUM DUNKERI Hanley.

Cat. No. 18798, U.S.N.M., one from Port Elizabeth. Cat. 186793, U.S.N.M., one from Port Alfred (Coll. No. 156).

Family AMPHIPERASIDAE.

Genus AMPHIPERAS Meuschen.

AMPHIPERAS BECKERI Smith.

Cat. No. 186977, U.S.N.M., one specimen from Port Alfred (No. 509). Cat. No. 249662, U.S.N.M., contains another specimen from the same locality (Coll. No. 934).

AMPHIPERAS SMITHI, new species.

Plate 10, figs. 1, 3.

Shell irregularly elongate-ovate, purplish pink, with a moderate wide median band, and the tips and lip yellowish white. The surface of the shell is smooth, excepting fine, equally spaced and equally tributed, spiral threads which are best developed near the anterior and posterior fourth, becoming weaker as they approach the center. In addition to this spiral sculpture, there are exceedingly fine lines of growth which are best seen in the spaces between the spiral threads. Aperture elongate-lunate, outer lip thick, forming a strong rounded callus at the edge; inner lip represented by a thin callus placed upon the body whorl, which becomes decidedly thickened on the anterior and posterior horns; a short distance posterior to the anterior end there is an oblique fold on the inner lip.

The type, Cat. No. 227715, U.S.N.M., comes from Port Alfred (No. 810). It measures: Length, 19.5 mm.; diameter, 8.1 mm.

Family CYPRAEIDAE.

Genus CYPRAEA Linnaeus.

CYPRAEA CAPENSIS Lamarck.

Cat. No. 18174, U.S.N.M., one from Natal. Cat. No. 75 U.S.N.M., three from Cape of Good Hope. Cat. No. 77266, U.S.N.M., two collected by E. R. Mayo at the same place. Cat. No. 77 U.S.N.M., two from Cape of Good Hope. Cat. No. 97980, U.S.N.M., six from Kleinemonde, Albany. Cat. No. 186796, U.S.N.M., from Port Alfred (Coll. No. 161). Cat. No. 250318, U.S.N.M., specimen from the same source (Coll. No. 1191). Cat. No. 250 U.S.N.M., one specimen from the same locality (Coll. No. 1191). Cat. No. 272122, U.S.N.M., four from Port Elizabeth.

CYPRAEA SIMILIS Gray.

Cat. No. 220121, U.S.N.M., one specimen from Cape of Good Hope.
Cat. No. 249661, U.S.N.M., contains two specimens from Port Alfred
(Coll. No. 933).

CYPRAEA VITELLUS Linnaeus.

Cat. No. 250317, U.S.N.M., contains a badly worn specimen from
Port Alfred (Coll. No. 1190).

CYPRAEA, species ?

Cat. No. 250320, U.S.N.M., contains a young specimen from Port
Alfred which I am unable to identify positively (Coll. No. 1193).

CYPRAEA EDENTULA Gray.

Cat. No. 43162, U.S.N.M., two from Cape of Good Hope. Cat. No.
75564, U.S.N.M., four from the same locality. Cat. No. 77709,
U.S.N.M., two from the same place. Cat. No. 97977, U.S.N.M., five
from Kleinemonde, Albany. Cat. No. 97978, U.S.N.M., seven from
the mouth of Fish River. Cat. No. 97979, U.S.N.M., two from
Kleinemonde, Albany. Cat. No. 186795, U.S.N.M., two from Port
Alfred (Coll. No. 159.) Cat. No. 250319, U.S.N.M., contains another
specimen from Port Alfred (Coll. No. 1192). Cat. No. 272123,
U.S.N.M., one specimen from South Africa. Cat. No. 272125,
U.S.N.M., four from Port Elizabeth.

CYPRAEA CITRINA Gray.

Cat. No. 186794, U.S.N.M., one specimen from Port Alfred (Coll.
No. 158). Cat. No. 186978, U.S.N.M., one from the same source (Coll.
No. 510).

CYPRAEA ALGOENSIS Gray.

Cat. No. 227713, U.S.N.M., one specimen from Port Alfred (Coll.
No. 808). Cat. No. 227714, U.S.N.M., one specimen from the same
locality (Coll. No. 809).

CYPRAEA OVULA Lamarck.

Cat. No. 18455, U.S.N.M., one from R. D. Darbishire, collected in
Natal. Cat. No. 43157, U.S.N.M., three from Cape of Good Hope.
Cat. No. 77717, U.S.N.M., two from the same place. Cat. No.
186976, U.S.N.M., three from Port Alfred (Coll. No. 508).

CYPRAEA FIMBRIATA Gmelin.

Cat. No. 249660, U.S.N.M., contains a specimen from Port Alfred
Coll. No. 932.

Family TRIPHOIDAE.

Genus TRIPHOID Group.

TRIPHOID GIBBOSUS Gussak.

Cat. No. 72892, U.S.N.M., two specimens from Cape of Good Hope.
 Cat. No. 97961, U.S.N.M., two specimens from Albany coast, Southern
 Africa. Cat. No. 129415, U.S.N.M., one collected by Warren, at Cape
 of Good Hope. Cat. No. 186735, U.S.N.M., one specimen from Port
 Alfred (Cat. No. 1007). Cat. No. 186736, U.S.N.M., one from Algoa
 Bay. Cat. No. 172028, U.S.N.M., three specimens from Port
 Elizabeth.

TRIPHOID SCOTCHMAN Gussak.

Cat. No. 186738, U.S.N.M., two specimens from Port Alfred (Cat.
 No. 1007).

TRIPHOID TRIPHOIDES Gussak.

Cat. No. 186739, U.S.N.M., one specimen from Port Alfred (Cat.
 No. 1007).

TRIPHOID PRIMITIVUS Gussak.

Cat. No. 186810, U.S.N.M., two specimens from Port Alfred (Cat.
 No. 1007).

Family TRIPHORIDAE.

Genus TRIPHORIS Deshayes.

TRIPHORIS ATEA, new species.

Plate II, fig. 4.

Shell rather large, wax yellow. Nuclear whorls decollated, except
 the last turn which is smooth. Postnuclear whorls almost flattened,
 slightly shouldered at the summit, marked by strong, rounded,
 slightly protractive axial ribs, which are interrupted by a deep spiral
 sulcus at the anterior extremity of the posterior two-thirds of the
 ribs, which lends them the appearance of so many exclamation points.
 Of these ribs, 16 occur upon the first to third, 18 upon the fourth, 20
 upon the fifth, 22 upon the sixth and seventh, and 26 upon the re-
 maining whorls. The ribs are abruptly truncated at the anterior
 termination of the sulcus and slopingly so at the posterior. In
 addition to the above sculpture, there appears in the suture of each
 turn, an almost smooth, strong spiral cord, which on the last turn,
 forms the peripheral cord, to which the axial ribs extend feebly.
 Base very short, slightly concave, marked by three equal and equally
 spaced spiral cords which occupy the space between the peripheral
 cord and the insertion of the columella. The spaces which separate
 these cords are a little less wide than the cords. Aperture decidedly
 channelled anteriorly and less strongly so posteriorly; outer lip ren-

dered sinuous by the external sculpture, translucent, showing the external sculpture within; columella covered by a thick callus which is reflected over the parietal wall and renders the peritreme complete.

The type, Cat. No. 250350, U.S.N.M., comes from Port Alfred (Coll. No. 1223). It has $11\frac{1}{2}$ whorls and measures: Length, 12 mm.; diameter, 3.5 mm.

TRIPHORIS CONVEXA Smith.

Cat. No. 186805, U.S.N.M., one specimen from Port Alfred (Coll. No. 171). Cat. No. 227724, U.S.N.M., four specimens from the same source (Coll. No. 819). Cat. No. 227725, U. S.N.M., four specimens also from Port Alfred (Coll. No. 820).

TRIPHORIS, species ?

Cat. No. 250347, U.S.N.M., contains a young individual of a pure white species from Port Alfred, which differs from any of the known species, but is too young to serve for a diagnosis. (Coll. No. 1220).

TRIPHORIS HELENA, new species.

Plate 11, figs. 2, 5.

Shell elongate-conic, bluish white. Nuclear whorls almost four; the first third of a turn smooth, the succeeding marked by two strong, lamellar spiral cords, the first of which is at the summit and the second about as far above the suture as it is separated from the first. Post-nuclear whorls strongly rounded, ornamented with three strong, sub-lamellar spiral cords which are feebly tuberculated. The first of these cords is at the summit, the third about as far above the suture as it is separated from the median, while the median occupies the space midway between the other two. In addition to these spiral cords, the whorls are marked by about 20 obsolete, broad riblets which render the spiral cords feebly tuberculated. In addition to the above sculpture, the entire surface is marked with fine lines of growth and microscopic, spiral striations. Suture channeled. Periphery of the last whorl marked by a broad spiral sulcus which is equal to the sulcus separating the supraperipheral cord from the median cord. This sulcus is bound anteriorly by a cord equal to those on the spire, a second feeble spiral cord is situated at the insertion of the columella, the space between these two being a broad, concave area. Aperture decidedly channeled anteriorly, feebly so posteriorly; outer lip thin, showing the external sculpture within, rendered sinuous at the edge by the external sculpture; columella stout, covered with a strong callus which extends over the parietal wall and renders the peritreme complete.

Cat. No. 250348, U.S.N.M., contains the nuclear tip of a young specimen, and an adult specimen, minus the nucleus. These may be con-

s. They come from Port Alfred (Coll. No. 1221). The specimen has seven postnuclear whorls, and measures: length, 5.1 mm.; diameter, 2 mm. The adult specimen has lost the nuclear turns; the 12 postnuclear turns measure: Length, 8.6 mm.; diameter, 2.4 mm. Cat. No. 249676, U.S.N.M., contains another specimen from the same place (Coll. No. 948). Cat. No. 250349, U.S.N.M., contains the nuclear tip of another specimen from the same locality (Coll. No. 1222).

TRIPHORIS FUSCOMACULATA Smith.

Four lots of these specimens are in the collection of the United States National Museum, all from Port Alfred. Cat. No. 186806, three specimens (Coll. No. 172). Cat. No. 227718, three specimens (Coll. No. 813). Cat. No. 227723, two specimens (Coll. No. 818). Cat. No. 249684, two specimens (Coll. No. 956).

TRIPHORIS SMITHI, new species.

Plate 10, figs. 7, 8.

Shell very elongate-conic; yellowish white; irregularly flecked with blotches and streaks of pale brown. Nuclear whorls partly decolated. The first of the remaining turns is a little larger than the succeeding and is smooth. The three following volutions increase very gently in size and are marked by two strong spiral cords, of which the first is at the summit and the second some little distance above the periphery, the space between the two, which is deeply concaved, being about twice as wide as either of the keels. Postnuclear whorls moderately rounded, ornamented with three strong spiral cords of which the median is a little stronger than the other two. The first of these is at the summit and the third a little above the suture. The sulci separating the median from the other two cords are equal to the median cord in width. In addition to the spiral sculpture, the whorls are marked by axial ribs which are about half as strong as the spiral cords. Of these ribs, 16 occur upon the first, 18 upon the second, 20 upon the third and fourth, 21 upon the fifth, 22 upon the sixth, and 24 upon the remaining turns. The junction of the axial ribs and the spiral cords form feeble tubercles. Sutures feebly impressed, scarcely differentiated from the sulci between the spiral cords. Periphery of the last whorl rendered angular by a strong spiral cord; the sulcus between which and the cords adjacent to it posteriorly, is crossed by the continuations of the axial ribs. Base very short and slightly rounded, marked by two spiral cords which are less strong than the peripheral one, separated by deep grooves. Aperture moderately large, channeled anteriorly; outer lip forming a decided angle at the junction; basal lip, rendered decidedly wavy at the edge by the

ture; inner lip appressed to and reflected over the short base; parietal wall covered by a thin callus.

Cat. No. 227719, U.S.N.M. (Coll. No. 814), contains three specimens from Port Alfred. Two of these are cotypes; one, a young individual of 11 postnuclear whorls, has served for our description of the nucleus and the early postnuclear whorls. This measures: Length, 7 mm.; diameter, 2.2 mm. The other, an adult individual having lost the nucleus and probably the first four postnuclear turns, retaining the last 13 whorls, measures: Length, 13 mm.; diameter, 3 mm. Cat. No. 227720, U.S.N.M. (Coll. No. 815) two specimens from the same locality.

TRIPHORIS ELSA, new species.

Plate 11, fig. 1.

Shell elongate-conic, bluish white. Nuclear whorls decollated, the last turn only remaining, which is smooth. Postnuclear whorls moderately rounded, marked by three spiral cords, of which the first is a little anterior to the summit, while the third is as far above the suture as it is separated from the median. The median occupies a position half way between the other two. In addition to these spiral cords, the whorls are marked by slightly protractive, moderately strong, rounded axial ribs, of which 18 occur upon all but the last two whorls, which have 20. The junction of the axial ribs and the spiral cords form rounded nodules, which have the long axis parallel to the spiral sculpture. These nodules are well rounded on the posterior cord, while on the median cord they are truncated anteriorly and posteriorly, a little more abruptly anteriorly than posteriorly. On the third cord they are truncated posteriorly and sloped gently anteriorly. The spaces inclosed between the cords form shallow, rectangular pits. The summit of the whorls falls a little anterior to the peripheral cord and allows this to be apparent in all the sutures. Periphery of the last whorl marked by a strong cord, which is separated from the first supra-peripheral cord by a sulcus as wide as that which separates those from the median cord. This sulcus, like the other, is crossed by continuations of the axial ribs, which terminate at the posterior edge of the peripheral cord. Base concave, marked by a slender, spiral cord immediately adjacent to the peripheral cord. In addition to the above sculpture the entire surface of the shell is marked by fine lines of growth and microscopic spiral striations. Aperture channeled anteriorly; outer lip thin, showing the external sculpture within and rendered sinuous by the external sculpture at the edge; columella stout, curved, covered by a thin callus, which extends over the parietal wall.

Cat. No. 249678, U.S.N.M., contains two adolescent shells of this species, one of which is the type. They are from Port Alfred (Coll.

No. 950). The type has lost the early nuclear whorls, the last one only remaining. In addition to that it has a little more than 16 post-nuclear whorls, and measures: Length, 9.5 mm.; diameter, 3.1 mm.

TRIPHORIS SHEPSTONENSIS Smith.

Cat. No. 186804, U.S.N.M., four specimens from Port Alfred (Coll. No. 170). Cat. No. 227716, U.S.N.M., six specimens from the same locality (Coll. No. 811). Cat. No. 250351, U.S.N.M., another specimen from Port Alfred (Coll. No. 1224).

TRIPHORIS MILDA, new species.

Plate II, fig. 3.

Shell elongate-conic, light brown. Nuclear whorls decollate. Post-nuclear whorls tabulatedly shouldered at the summit, flattened marked by three strong, tuberculated spiral cords, of which the first is at the summit, the second halfway between this and the last, the latter being about as far above the suture as it is distant from the median. In addition to the spiral cords the whorls are marked rather strong, broad, almost vertical axial ribs, of which 14 occur upon the first and second, 16 upon the third, 20 upon the fourth and fifth, 22 upon the sixth to ninth, 26 upon the tenth, 24 upon the eleventh, 26 upon the twelfth, and 28 upon the thirteenth and penultimate turn. The junctions of the axial ribs and the spiral cords form strong tubercles, of which those on the first cord are truncated anteriorly, forming a decidedly channeled, crenulate suture. These tubercles are of oval outline, having their long axis parallel with the ribs. The tubercles of the median cord are also rounded, truncated posteriorly, and slope gently anteriorly. Those of the supra-sutural cord are smaller than the rest and a little more strongly truncated posteriorly, sloping abruptly anteriorly. The spaces inclosed between the axial ribs and peripheral cords are rounded, strongly impressed pits. Sutures strongly channeled, shading a portion of the first basal cord. Periphery of the last whorl marked by a sulcus, which is crossed by the continuations of the axial ribs and is about as wide as the sulcus on the spire. Base well rounded marked by three strong spiral cords, which divide the posterior half of the base, that is, the space between the peripheral sulcus and the insertion of the columella, into equal portions. The three cords become diminished in strength in regular sequence from the one adjacent to the periphery to the one on the columella. The entire surface of the shell is marked by exceedingly fine lines of growth and microscopic spiral striations. Aperture strongly channeled anteriorly, less so posteriorly; junction of the basal and outer lip forming a decided angle that projects as a claw-like element; outer lip thin, showing the external sculpture within; columella short, stout, curved, marked by a thick callus which extends over the parietal wall and renders the peritreme complete.

The type and another specimen, Cat. No. 249685, U.S.N.M., come from Port Alfred (Coll. No. 957). The type has $13\frac{1}{2}$ postnuclear whorls, and measures: Length, 9.6 mm.; diameter, 3 mm.

TRIPHORIS OREADA, new species.

Plate 11, fig. 4.

Shell elongate-conic, flesh colored. Nuclear whorls decollated, excepting a very small portion of the last turn, which is smooth. Post-nuclear turns marked by three lamellar, spiral keels, which are very feebly tuberculated. Of these keels the first is at the summit and the last about as far above the suture as it is from the median, which is half way between the other two. These spiral lamellae are truncated abruptly anteriorly and posteriorly and are somewhat flattened at the summit and are about as wide as the spaces that separate them. In addition to the spiral lamellae, the whorls are marked by numerous, feeble, slightly retractive axial ribs, which are best developed in the grooves between the spiral lamellae, passing up on the sides of these and rendering them weakly nodulous on the two sides. Of these ribs, about 20 occur upon the first to third, 22 upon the fourth to sixth, 24 upon the seventh, 26 upon the eighth, 28 upon the ninth to eleventh and 30 upon the penultimate turn. The spaces inclosed between the spiral lamellae and the axial riblets are squarish, weakly impressed pits. Periphery of the last whorl marked by a spiral cord a little weaker than the lamellae on the spire and separated from the supra-peripheral cord by a sulcus about as wide as those on the spire, which is crossed by the feeble continuations of the axial riblets. Base provided with another spiral cord which is half way between the peripheral cord and the insertion of the columella. Aperture very strongly twisted and channeled anteriorly, slightly less so posteriorly; outer lip patulous, thin, showing the external sculpture within; columella very much twisted and curved, covered with a thick callus which also extends over the parietal wall and renders the peritreme complete.

Cat. No. 249682, U.S.N.M., contains the type and another specimen, both from Port Alfred (Coll. No. 954). The type has 13 whorls, and measures: Length, 8.8 mm.; diameter, 2.1 mm.

TRIPHORIS, species?

Cat. No. 187045, U.S.N.M., contains a young, broadly conic, brown species, from Port Alfred, which differs from any of the other material we have seen from South Africa, but is too young to be positively determined (Cat. No. 583).

TRIPHORIS AFRICANA, new species.

Plate 5, fig. 11.

Shell elongate-conic, light chestnut brown, except the nucleus and the early post-nuclear whorls which are wax yellow, with the

posterior row of tubercles on each turn flesh colored. Nuclear whorls $3\frac{1}{2}$, the first half smooth, the remainder marked by two slender spiral threads, which are placed anterior and posterior to the middle of the whorls, leaving a narrow space between them about one-half the width of that between the summit and the first spiral thread below it. In addition to the spiral threads, these whorls are marked with slender axial riblets, which curve strongly, retractively from the summit to the first spiral thread, crossing the space between the two spiral threads in a straight, retractive line, then continuing over the anterior portion of the wall in a slightly curved, protractive manner. These riblets are very feeble on all but the last nuclear whorl, on which they are much stronger. On this there are 34. Postnuclear whorls flattened. The first four are marked with two strong spiral cords, of which one is immediately below the shouldered summit, while the other is a little above the suture. Beginning with the fifth, a slender spiral cord makes its appearance half way between the other two. This increases rapidly in size and on the seventh is equal to the others. In addition to this spiral structure, the whorls are marked with strong axial ribs, of which 16 occur upon the first, 18 upon the second to sixth, 20 upon the seventh to ninth, and 22 upon the penultimate turn. On the first four whorls, the junction of the axial ribs and spiral cords form strong, rounded tubercles on the cord at the summit, while at the anterior cord the tubercles are truncated posteriorly and slope gently anteriorly, the whole having a somewhat dumbbell shape. On the remaining cords the same structure applies to the shape of the tubercles of the first and third cords, while on the median cord of the fourth and fifth whorls the tubercles are elongate-oval, having their own axes parallel with the spiral sculpture. On the remaining cords, the tubercles and the median cords resemble those of the suprapерipheral cord. The spaces inclosed between the spiral cords and the axial ribs are large, well impressed, squarish pits on the first four turns, while on the remaining turns they appear as rounded pits. Sutures strongly impressed. Periphery of the last whorl marked by a smooth spiral cord, which is separated from the suprapерipheral cord by a groove about as wide as that which separates the suprapерipheral cord from its posterior neighbor, and crossed by the continuations of the axial riblets which terminate at the posterior border of the peripheral keel. Base moderately long, well rounded, marked by three, strong, broad, low, rounded, equally spaced, spiral cords, which are separated by narrow, rounded, impressed channels. The last one of these is partly upon the columella. Aperture irregular, decidedly channeled anteriorly; posterior angle obtuse; outer lip rendered sinuous and irregular by the external sculpture; columella covered with a very thick callus which is reflected over the base and extends over the parietal wall.

The type and another specimen, Cat. No. 186804a, U.S.N.M., come from Port Alfred (Coll. No. 170). The type has $13\frac{1}{2}$ whorls, and measures: Length, 5 mm.; diameter, 1.7 mm. Cat. No. 227717, U.S.N.M., contains six specimens from the same locality (Coll. No. 812). Cat. No. 249679, U.S.N.M., one specimen from same locality (Coll. No. 951).

TRIPHORIS CAPENSIS, new species.

Plate 5, fig. 4.

Shell very elongate-ovate, white. Nuclear whorls decollated. Postnuclear whorls flattened, the first two marked by two strong spiral cords, of which the first is at the summit, and the second a little nearer the suture than to the one at the summit. Beginning with the second whorl, a slender spiral cord appears between the other two, which increases rapidly in size obtaining almost the strength of the other two on the last revolution. In addition to these spiral cords, the whorls are marked with well rounded, almost vertical, straight, axial ribs, of which 14 occur upon the first, 18 upon the second to fifth, 20 upon the sixth, and 22 upon the penultimate turn. The junctions of the axial ribs and the spiral cord form low tubercules, while the spaces inclosed between them appear as deep squarish pits. Sutures strongly constricted. Periphery of the last whorl angulated, marked by a strong spiral cord which is feebly tuberculated. Base moderately long, the posterior half provided with two equal and equally spaced, spiral cords, while the anterior portion appears as a strongly tumid area. Aperture decidedly irregular, strongly channeled anteriorly; posterior angle decidedly channeled; outer lip thin, decidedly curved and very strongly produced anteriorly; the portion facing the columella is pinched in and so curved as to almost touch the columella, leaving only a very narrow slit between it and the columella; parietal wall covered with a very thick callus.

The type and another specimen, Cat. No. 187044, U.S.N.M., were collected at Port Alfred (Coll. No. 582). The type has eight post-nuclear whorls, and measures: Length, 5.1 mm.; diameter, 2 mm.

TRIPHORIS MADRIA, new species.

Plate 12, fig. 5.

Shell elongate-conic, white. Nuclear whorls large, forming a rather bulbous apex on the shell. The first turn smooth, the following encircled by three smooth, spiral bands. The second turn is larger in diameter than the two succeeding. Post-nuclear whorls moderately rounded, ornamented with three spiral cords, of which the one at the summit is a little weaker on the early whorls than on the rest. The third cord is about as far from the suture as it is from the median, while the median cord occupies a position halfway between the other two. The sulci separating the spiral cords are a little wider than the cords. In addition to the spiral cords the whorls are marked by

poorly separated, low, rounded, slightly protractive, axial ribs, of which 16 occur upon the first and second, 18 upon the third, 20 upon the fourth to sixth, and 24 upon the penultimate whorl. The junction of these ribs and the spiral cords form poorly defined tubercles. Those on the first cord being very illdefined and oval, while those on the median cord are oval and truncated anteriorly and posteriorly, having the long axis parallel with the spiral sculpture, appearing like a series of strung beads. Those of the anterior cord are truncated posteriorly and are well rounded anteriorly. Sutures channeled, a little more strongly so than the space between the spiral cords of the spire. Periphery of the last whorl marked by a spiral sulcus about as wide as the sulci on the spire and like those crossed by the continuation of the axial ribs which terminate at the posterior edge of the first basal cord. Base moderately rounded, marked by four spiral cords which grow successively weaker from the first, immediately below the periphery, to the last, which is on the base of the columella. In addition to this sculpture, the entire surface is marked by exceedingly fine lines of growth and microscopic, spiral striations. Aperture rather large, decidedly channeled anteriorly, less so posteriorly, patulous at the junction of the outer and basal lip; outer lip thin, showing the external sculpture within and rendered sinuous at the edge by the external sculpture; columella covered by a thick callus, which is reflected over the parietal wall and renders the peritreme complete.

The type, and another specimen, Cat. No. 249677, U.S.N.M., come from Port Alfred (Coll. No. 949a). The type is a perfect specimen having the four nuclear turns and eight postnuclear whorls, and measures: Length, 6.5 mm.; diameter, 2 mm.

TRIPHORIS, species?

Cat. No. 249677, U.S.N.M., contains a pure white specimen, recalling strongly in sculpture *Triphoris milda*, but it is of a much smaller species with four basal keels; it is not quite adult and we refrain from describing it for the present till better material may be had. It comes from Port Alfred (Coll. No. 949a).

TRIPHORIS SABITA, new species?

Plate 11, fig. 7.

Shell small, elongate-conic, ovate, light brown, excepting the tips of the tubercles which are flesh colored. The extreme tip of the shell is wax-yellow and the outer lip is white. Nuclear whorls a little more than two, the first smooth, the second finely transversely ribbed, the riblets having slender nodules, the first of which is near the summit, the other immediately above the suture. Post-nuclear whorls moderately rounded, the first two ornamented by two nodulose, spiral cords, the first of which is at the summit and the

second at some little distance posterior to the suture. Beginning with the third whorl, a slender, spiral thread makes its appearance half way between the two strong cords; this increases steadily in size and on the last turn it bears nodules almost as strong as those of the other two cords. In addition to the spiral sculpture, the whorls are marked by slender, vertical, axial ribs, the junction of which with the spiral cords render them tuberculated. Of these ribs, 20 occur upon all but the last, which turn has 22. The spaces inclosed between the axial ribs and the spiral cords form well impressed pits. The tubercles of the cord at the summit are strongly rounded; those of the median cord are merely thickened lines at the junction on the first two whorls where they occur, while on the last, they are oval, their long axis coinciding with the spiral cord. Those of the third cord are truncated posteriorly, sloping gently anteriorly. Sutures a little broader than the sulci between the spiral cords. Periphery of the last whorl marked by a spiral sulcus which is about as broad as the one separating the suprapерipheral from the median cord on the last whorl. Base well rounded, marked by two spiral cords, the first of which is immediately below the periphery, the second half way between this and the insertion of the columella. In addition to the above mentioned sculpture, the entire surface of the shell is marked by fine lines of growth and microscopic, spiral striations. Aperture strongly channeled anteriorly, feebly so posteriorly, decidedly patulous at the junction of the outer and basal lip; outer lip thin, showing the external sculpture within and rendered sinuous at the edge by this sculpture; columella short, very stout, covered on its inner edge by a strong callus which is reflected over the parietal wall and renders the peritreme complete.

Cat. No. 249680, U.S.N.M., contains three specimens from Port Alfred (Coll. No. 952). One of these, the type, has six postnuclear whorls, and measures: Length, 3 mm.; diameter, 1.4 mm.

TRIPHORIS, species?

Cat. No. 250353, U.S.N.M., contains the tip of a dusky cylindric species, which we are unable to identify, from Port Alfred (Coll. No. 1226).

TRIPHORIS FUSCESCENS Smith.

The United States National Museum contains four lots of this species from Port Alfred, as follows: Cat. No. 186808, two specimens (Coll. No. 174). Cat. No. 220061, one specimen (Coll. No. 173a). Cat. No. 227721, two specimens (Coll. No. 816). Cat. No. 249674, two specimens (Coll. No. 946).

TRIPHORIS CEREА Smith.

Cat. No. 249681, U.S.N.M., contains three specimens from Port Alfred (Coll. No. 953).

TRIPHORIS NINA, new species.

Plate 11, fig. 8.

Shell elongate-conic, light chestnut brown, excepting the tubercles of the cord at the summit on each turn, which have a purplish tinge. (Nuclear whorls decollated.) Postnuclear whorls very slightly rounded, ornamented on the first four turns by two spiral tuberculated cords, one of which is at the summit and the tubercles of the other slope to the suture. Beginning with the fifth turn, a slender spiral thread makes its appearance half way between the two, which increases rapidly in size and assumes tubercles on the following turns. On the seventh turn, another spiral thread makes its appearance half way between the median and basal cord. This likewise increases in size, and on the last three turns the tubercles of these two cords are as strong as those of the first and fourth. In addition to the spiral cords the whorls are marked by low, rather broad, feeble, axial ribs, of which 16 occur upon the first to third, 18 upon the fourth and fifth, 20 upon the sixth to eighth, 22 upon the ninth, and 24 upon the last turn. These ribs are moderately protractive on the first five turns and become very strongly so on the last. The junction of the axial ribs and the spiral cords form moderately strong tubercles, which are oval on the first two cords, having their long axis parallel with that of the spiral sculpture. On the last two cords they are truncated anteriorly, sloping gently posteriorly. The spaces inclosed between the axial ribs and spiral cords are shallow, oval pits. Sutures channeled. Periphery of the last whorl marked by a sulcus as strong as those of the spire, and like those, crossed by the continuation of the axial ribs. Base well rounded, marked by three subequal spiral cords, which divide the space below the periphery and the insertion of the columella, into equal areas. Aperture decidedly channeled anteriorly; outer lip (fractured); columella short, stout, twisted, covered with a thick callus which extends over the parietal wall.

The type, Cat. No. 250352, U.S.N.M., comes from Port Alfred (Coll. No. 1225), it has lost the nucleus and probably the first post-nuclear turn; the $10\frac{1}{2}$ remaining measure: Length, 5 mm.; diameter, 1.5 mm.

TRIPHORIS IMA, new species.

Plate 10, fig. 6.

Shell large, yellowish white, spotted and blotched with very light chestnut brown. (Nuclear whorls decollated in all our specimens.) Postnuclear whorls flattened, marked with four strong, flattened, spiral keels which are about as wide as the deep grooves which separate them. The first of these keels is at the summit and is a little wider than the other three. The space separating this from its

neighbor is also a little wider than the other spaces. The spiral grooves are crossed by numerous, very slender, somewhat irregularly spaced, axial threads. Sutures strongly constricted, usually showing the peripheral cord. Periphery of the last whorl marked by a strong cord which is separated from the suprapерipheral cord by a groove as wide as that which separates this from its posterior neighbor. Base short, slightly rounded, marked by two low, broad, spiral cords which divide the space between the insertion of the columella and the peripheral cord equally, the spaces separating them being about equal to the cords in width and crossed by numerous, very slender, raised, axial threads. Aperture (fractured in all our specimens) strongly channeled anteriorly; outer lip rendered sinuous by the external sculpture; columella almost straight, strongly reflected over the reinforcing base, a callus extending over the parietal wall.

The type consists of the seven last whorls, which measure: Length, 9.5 mm.; diameter, 3 mm. It and another specimen, Cat. No. 186807 U.S.N.M., come from Port Alfred (Col. No. 173). The second specimen shows an intercalated spiral cord between the second and third keel and another between the third and fourth, almost equaling the keels in strength on the last volution.

Three additional lots, all from Port Alfred, are in the collection of the United States National Museum. Cat. No. 227722, two specimens (Coll. No. 817). Cat. No. 249683, two specimens (Coll. No. 955). Cat. No. 249675, two specimens (Coll. No. 947).

Family CERITHIOPSIDAE.

Genus CERITHIOPSIS Forbes and Hanley.

CERITHIOPSIS (CERITHIOPSIS) ALFREDENSIS, new species.

Plate 5, fig. 9.

Shell elongate-conic, light chestnut brown, with the early whorls wax-yellow. (Nuclear whorls decollated, the last one only remaining, which is smooth.) Postnuclear whorls almost flattened, marked with three strong spiral cords of which the first is at the summit, while the third is about as far above the suture as it is separated from the median. The latter is about halfway between the first and third. The spaces between the spiral cords are about as wide as the cords. In addition to the spiral sculpture, the whorls are marked by axial ribs which are almost as strong as the spiral cords. Of these ribs, 18 occur upon the first to fifth, 20 upon the sixth, 22 upon the seventh, 24 upon the eighth and the penultimate turn. The junction of the axial ribs and the spiral cords form prominent tubercles which are truncated posteriorly and slope gently anteriorly. The spaces inclosed between the axial ribs and spiral cords are well rounded,

strongly impressed pits. Sutures strongly impressed. Periphery of the last whorl marked by a strong spiral cord, which is separated from the first supraperipheral cord by a groove about as wide as those separating the cords on the spire, and, like these, is crossed by the continuations of the axial ribs, which terminate at the posterior border of the peripheral cord. Base moderately long, somewhat irregular, the peripheral cord extending over one-third of the base, while a strong spiral cord encircles the columella at its insertion, the space between this and the peripheral cord being a very deeply impressed, broad, spiral groove. Anterior to the cord marking the insertion of the columella, there is another deeply incised, broad, spiral groove. Aperture irregular, decidedly channeled anteriorly; posterior angle channeled; outer lip irregular, sinuous; columella strong, curved and reflected over and appressed to the base; parietal wall covered by a thick callus which connects the columella with the posterior angle of the aperture.

The type, Cat. No. 186803, U.S.N.M., was collected at Port Alfred (Coll. No. 169). It has 10 postnuclear whorls, and measures: Length, 5 mm.; diameter, 1.5 mm. Three additional lots are in the collection of the United States National Museum, all from Port Alfred. Cat. No. 227727, two specimens (Coll. No. 822). Cat. No. 249692, one specimen (Coll. No. 964). Cat. No. 250355, one specimen (Coll. No. 1228).

CERITHIOPSIS (CERITHIOPSIS) EXQUISITA Sowerby.

Cat. No. 227726, U.S.N.M., two specimens from Port Alfred (Coll. No. 821). Another specimen, Cat. No. 250359, U.S.N.M., also comes from Port Alfred (Coll. No. 1232).

CERITHIOPSIS ERNA, new species.

Plate 12, fig. 6.

Shell very light chestnut brown. (Nuclear whorls decollated.) Postnuclear whorls very slightly rounded, marked by three tuberculated spiral cords, of which the first is at the summit which it renders shouldered, while the last is a little posterior to the periphery, and the second, midway between the two. In addition to the spiral cords, the whorls are marked by somewhat protractive axial ribs which almost equal the spiral cords in strength. The junctions of the axial ribs and the spiral cords form nodules, while the spaces inclosed between them appear as strongly impressed, squarish pits. The nodules on the cord at the summit are well rounded, those on the middle cord are truncated posteriorly, sloping gently anteriorly, which is also the case on the third cord, but here the nodules are even more abruptly truncated than on the median cord. Of the axial ribs, 18 occur upon the first to fourth, 20 upon the fifth, 22 upon the sixth and seventh, and 24 upon the penultimate turn. In

addition to the above sculpture, the spire is marked by exceedingly fine lines of growth and microscopic spiral striations. Sutures channeled. Periphery of the last whorl marked by a spiral sulcus as broad as the one posterior to the suprasutural cord and, like that, crossed by the axial ribs, which terminate at its posterior margin. Base short, marked by two spiral cords which are of equal strength and confined to the posterior half of the base. The anterior half of the base between the last cord and the insertion of the columella is slightly concave in the adolescent shell. Aperture subquadrate, decidedly channeled anteriorly; posterior angle obtuse; outer lip rendered sinuous by the sculpture; columella stout; parietal wall glazed with a thin callus.

The type and another specimen, Cat. No. 250354, U.S.N.M., come from Port Alfred (Coll. No. 1227). The type, which is an adolescent specimen, has eight and a half postnuclear whorls and measures: Length, 4.5 mm.; diameter, 1.5 mm. Cat. No. 250357, U.S.N.M., contains another specimen from the same locality (Coll. No. 1230).

CERITHIOPSIS (CERITHIOPSIS) NINA, new species.

Plate 12, fig. 2.

Shell very small, light chestnut brown. Nuclear whorls smooth, forming the slender, mucronate apex of the shell. Postnuclear whorls slightly shouldered at the summit, moderately rounded, marked by three spiral cords, of which the first is at the summit, the third about as far posterior to the suture as it is separated from its neighbor posteriorly. In addition to the spiral sculpture, the whorls are marked by strong axial ribs which equal the spiral sculpture in strength. The junctions of the axial ribs and the spiral cords form tubercules, while the spaces inclosed between them form well impressed, squarish pits. The tubercles of the cord at the summit are slightly truncated posteriorly, and slope gently anteriorly; those of the succeeding two cords are abruptly truncated posteriorly, sloping gently anteriorly. Of the axial ribs, 18 occur upon all the whorls except the penultimate, on which there are 20. Sutures moderately constricted. Periphery of the last whorl marked by a strong spiral cord, the space between it and the suprasutural cord being crossed by the continuation of the axial ribs which terminate at the posterior edge of the peripheral cord. Base slightly concave, with a spiral cord at the insertion of the columella. Aperture strongly channeled anteriorly, almost circular; outer lip thin; columella covered with a thick callus which is reflected over the parietal wall and connects this with the posterior angle of the aperture, rendering the peristome complete.

The type and another specimen, Cat. No. 250358, U.S.N.M., come from Port Alfred (Coll. No. 1231). The type has almost five postnuclear whorls, and measures: Length, 1.9 mm.; diameter, 0.7 mm.

strongly impressed pits. Sutures strong of the last whorl marked by a strong spiral from the first suprapерipheral cord by a groove separating the cords on the spire, and, like continuations of the axial ribs, which terminate in the peripheral cord. Base moderately irregular, the peripheral cord extending over one strong spiral cord encircles the columella between this and the peripheral cord beveled; broad, spiral groove. Anterior to the suture on the columella, there is another deeply sinuate. Aperture irregular, decidedly channeled, third, channeled; outer lip irregular, sinuous, the periphery reflected over and appressed to the base of the cords, thick callus which connects the columella as well as the suture. The summit of the apertures.

The type, Cat. No. 186803, U.S. National Museum (Coll. No. 169). It has 10 postquadrangular ribs, 5 mm.; diameter, 1.5 mm. Three of which, as of the United States National Museum (Coll. No. 227727, two specimens (Coll. No. 964). Cat. No. 1228).

CERITHIOPSIS (CERITHIUM) *very stout, co*

Cat. No. 227726, U.S.N.M., 1000 ft. over the pair
No. 821). Another specimen 1000 ft. over angle and
from Port Alfred (Coll. No. 1000).

No. 249688, U

Shell very light chestnut
Postnuclear whorls very st

lated spiral cords, of which shouldered, while the last second, midway between the whorls are marked almost equal the spiral axial ribs and the spirals closed between them at The nodules on the cord on the middle cord anteriorly, which is also to are even more abrupt the axial ribs, 18 occur upon the sixth and

which the first is at the summit, while the third is about as far above the suture as it is distant from the cord adjacent to it posteriorly, median cord being a little nearer than that a little anterior to it. In addition to the spiral cords the whorls are marked by strong axial ribs, of which 18 occur upon all the whorls. The intersection of the spiral cords and the axial ribs, form very strong tubercles, while the spaces inclosed between them appear as well impressed, oval pits, the long axis of which coincides with the spiral sculpture. The tubercles of the cord at the summit are well rounded; those of the other two cords are truncated anteriorly, sloping posteriorly; those of the median cord a little less so than those of the suprasutural cord. Sutures strongly channeled. Periphery of the last whorl marked by a sulcus which is as strong as that between the median and the suprasutural cord and like that crossed by the continuations of the axial ribs which extend over the cord anteriorly to the peripheral sulcus and renders this slightly tuberculated. Base marked by two spiral cords, the first immediately anterior to the peripheral sulcus, the other one occupying a position half way between this and the tip of the columella. Columella anterior to the second cord is crossed by several slender spiral threads. Aperture moderately large, decidedly channeled anteriorly; outer lip rendered sinuous by the external sculpture; inner edge of the columella covered with a thick callus which extends over the parietal wall, rendering the peritreme complete.

The type, Cat. No. 249690, U.S.N.M., comes from Port Alfred (Coll. No. 962). It has six and a half postnuclear whorls, and measures: Length, 3.8 mm.; diameter, 1.5 mm.

CERITHIOPSIS, species?

Cat. No. 250356, U.S.N.M., contains a worn specimen from Port Alfred (Coll. No. 1229). This is different from any we know from the region, but is too poor to be described.

Genus *SEILA* A. Adams.

SEILA ALFREDENSIS, new species.

Plate 5, fig. 6.

Shell very elongate-conic, light chestnut brown, maculated with blotches and spots of white. Nuclear whorls three, smooth, well rounded, white, forming a bulbous apex, the first turn being the largest. Postnuclear whorls moderately rounded, ornamented with four strong, flattened, subequal and subequally spaced spiral cords, of which the first is at the shouldered summit, while the anterior portion of the last abuts the summit of the succeeding whorls. The spaces inclosed between these cords are about as wide as the cords

and are crossed by numerous slender, quite regular, and regularly spaced axial riblets, which extend up on the sides of the spiral cords, but do not cross their summit. In addition to these axial riblets, the grooves between the cords are marked with many very fine, incised, spiral lines. Sutures moderately constricted. Periphery of the last turn angulated, the angle being formed by the fourth spiral cord. Base short, well rounded, marked by two spiral grooves, one of which forms the boundary for the anterior keel between the sutures, and is crossed by slender axial riblets like the spiral grooves on the spire, while the other, which is less strong, limits the columella. The space between these two grooves is crossed by numerous, fine, spiral striations and incremental lines. Aperture moderately large, subquadrate, decidedly channeled anteriorly. Posterior angle very obtuse; outer lip thick, rendered sinuous by the external spiral cords; columella short, strongly curved, and slightly reflected over the reinforcing base; parietal wall glazed with a moderately strong callus.

There are eight specimens of this species in the United States National Museum. Cat. No. 186802, collected at Port Alfred (Coll. No. 167). Two of these have served as cotypes, one having nuclear characters and the other showing the adult structures. Our figure is a composite one built upon these two specimens. The smaller of these two specimens has ten postnuclear whorls, and measures: Length, 8.5 mm.; diameter, 2.5 mm. The adult specimen, having lost the nuclear and the early whorls, has 10 whorls remaining, which measure: Length, 10 mm.; diameter, 3.1 mm.

SEILA AFRICANA, new species.

Plate 17, fig. 6.

Shell regularly elongate-conic, chestnut brown, a little lighter on the early whorls. (Nuclear whorls decollated). Postnuclear whorls flattened, marked with strong flattened spiral keels, of which three occur upon all the whorls between the sutures. The first of these is a little anterior to the summit, leaving a somewhat concave shoulder at the summit; the last is an equal distance above the suture; while the second is midway between the two. These keels are separated by deep, concave grooves which are a little wider than the keels. In addition to these spiral keels, the whorls are marked by exceedingly fine, closely-spaced, axial, raised threads, which cross the deep grooves that separate the spiral keels, the sutures appearing like the grooves on the whorl. On the last three whorls the summit of the turns falls slightly anterior to the peripheral cord, which shows partly in the suture. Periphery of the last whorl decidedly angulated, marked by a cord a little less strong than those occurring upon the spire. Base moderately long, well rounded, marked by two spiral cords, of which the first is about as far anterior to the peripheral

cord as that is from the one posterior to it; while the second, which is considerably more slender, is a little posterior to the insertion of the columella, the insertion of the columella being marked by a strongly impressed groove. In addition to the above sculpture, the entire base is marked by numerous, very slender, raised axial threads and exceedingly fine, spiral, striations. Aperture subcircular, decidedly channeled anteriorly; posterior angle obtuse; outer lip thin, rendered sinuous by the spiral keels; columella short, strongly curved and reflected over and appressed to the base; parietal wall covered with a thin callus.

The type and three specimens of this species Cat. No. 187043, U.S.N.M., come from Port Alfred (Coll. No. 581). The type has 10 postnuclear whorls and measures: Length, 7.6 mm.; diameter, 2.2 mm. The present species is much smaller than *S. alfredensis*. In coloration it is uniform chestnut brown, while *S. alfredensis* is maculated. The axial sculpture consists of much finer and much more numerous raised threads in *africana* than in *alfredensis*. The base of the present species has two spiral cords, while in *alfredensis* we have two incised lines only.

Two additional lots from Port Alfred are in the collection of the United States National Museum. Cat. No. 249686, 4 specimens (Coll. No. 958). Cat. No. 249687, 4 specimens (Coll. No. 959.)

SEILA SMITHI, new species.

Plate 12, fig. 7.

Shell very slender, elongate-conic, light chestnut brown, the tip a little lighter. First half of the nuclear turns smooth, the succeeding two and a half, well rounded, marked by two spiral threads and numerous, fine axial riblets, which are best expressed near the summit. Postnuclear whorls well rounded, marked by strong, somewhat flattened, equal and equally spaced, sublamellar spiral cords, of which 5 occur between the sutures, the first being at the summit, which it renders shouldered, and the last at the suture. The sulci, between the cords, are a little wider than the cords and are crossed by exceedingly numerous, very slender, slightly retractive axial threads. Sutures strongly constricted. Periphery of the last whorl marked by a strong spiral cord, which appears in the suture of the preceding whorls and furnishes the fifth cord on the spire. Base short, slightly concave on the posterior half, marked by very slender spiral threads at the insertion of the columella and lines of growth only. Aperture strongly channeled anteriorly; posterior angle obtuse; outer lip thin, rendered sinuous by the external sculpture, which shows through the substance of the outer lip; columella short, slightly curved, covered with a thin callus which extends up on the parietal wall.

The type, Cat. No. 250397, U.S.N.M., comes from Port Alfred (Coll. No. 1270). It has nine whorls, and measures: Length, 3.2 mm diameter, 0.8 mm.

Genus *EUMETA* Mörch.

EUMETA BIA, new species.

Plate 12, fig. 4.

Shell elongate-conic, white, subdiaphanous. Nuclear whorl almost three, inflated, well rounded, smooth. Postnuclear whorl slightly shouldered at the summit, well rounded, marked by three spiral cords, of which the first, which is at the summit, is a little less strong than the other two, the third is a little posterior to the suture, while the median is a little nearer the suprasutural cord than the one at the summit. In addition to the spiral cords, the whorls are marked by slender, almost vertical axial ribs, of which 22 occur upon all the whorls but the last, which has 26. The junction of the axial ribs and spiral cords form very feeble nodules, while the spaces inclosed between them appear as squarish, well-impressed pits. In addition to the sculpture the entire surface of the spire is marked by fine lines of growth and exceedingly fine spiral striations. Sutures strongly constricted. Periphery of the last whorl marked by a sulcus which is almost as wide as the sulcus separating the suprasutural cord from the median, and like this, it is crossed by the axial riblets. Base marked by a strong spiral cord bounding the peripheral sulcus, the rest is slightly concave and marked by feeble lines of growth and exceedingly fine spiral striations only. Aperture quite large, strongly channeled anteriorly; outer lip thin, rendered sinuous at the edge by the external sculpture which shows through the substance of the lip; columella stout, curved; parietal wall glazed by a thin callus.

The type, Cat. No. 250367 U.S.N.M., comes from Port Alfred (Coll. No. 1240). It is a young specimen having four postnuclear whorls only, and measures: Length, 2.7 mm.; diameter, 0.1 mm.

Family CERITHIIDAE.

Genus *CERITHIUM* Bruguiere.

CERITHIUM CONTRACTUM Sowerby.

Cat. No. 97995, U.S.N.M., six specimens from Albany, received from the Albany Museum. Cat. No. 186801, U.S.N.M., two specimens from Port Alfred (Coll. No. 166).

CERITHIUM VULGATUM Linnaeus.

Cat. No. 187042, U.S.N.M., one specimen from Port Alfred (Coll. No. 579).

CERITHIUM CRASSILABRUM Krauss.

Cat. No. 249689, U.S.N.M., contains a specimen from Port Alfred (Coll. No. 961).

CERITHIUM (POTAMIDES) DECOLLATA Linnaeus.

Cat. No. 18603, U.S.N.M., one specimen from Natal. Cat. No. 272132 U.S.N.M., four from Port Elizabeth.

Family **PLANAXIDAE**.Genus **PLANAXIS** Lamarck.**PLANAXIS PYRAMIDALIS** Deshayes.

Cat. No. 21804, U.S.N.M., one specimen collected by Dunker at Algoa Bay.

Family **CAECIDAE**.Genus **CAECUM** Fleming.**CAECUM GLABRATUM** Montagu.

Cat. No. 227809, U.S.N.M., four specimens from Port Alfred (Coll. No. 904). Cat. No. 249793, U.S.N.M., one specimen from the same locality (Coll. No. 1065).

Family **VERMETIDAE**.Genus **VERMICULARIA** Lamarck.**VERMICULARIA**, species ?

Cat. No. 187125, U.S.N.M., four worn specimens from Port Alfred (Coll. No. 671). Cat. No. 250540, U.S.N.M., contains three additional specimens from the same locality (Coll. No. 1413).

VERMICULARIA, species ?

Cat. No. 187120, U.S.N.M., four specimens of another species of *Vermicularia*, too fragmentary to be positively identified, from Port Alfred (Coll. No. 666). Cat. No. 227787, U.S.N.M., three specimens from the same locality (Coll. No. 882).

There are three lots of this species in the collection of the United States National Museum all from Port Alfred. Cat. No. 187124, four specimens (Coll. No. 670). Cat. No. 187127, one specimen (Coll. No. 673). Cat. No. 250541, three specimens (Coll. No. 1414).

Cat. No. 187122, U.S.N.M., two specimens of a fourth species from Port Alfred (Coll. No. 668) likewise too poor to be specifically determined. Cat. No. 250539, U.S.N.M., contains two additional specimens from Port Alfred (Coll. No. 1412).

Genus **SILICULARIA** Bruguiere.**SILICULARIA (PYXIPOMA) WELDI** Tension-Woods.

Cat. No. 187119, U.S.N.M., four specimens from Port Alfred (Coll. No. 665).

SILIQUARIA, species ?

Five lots of another species of *Siliquaria* are in the collection of the United States National Museum, all from Port Alfred. We have been unable to identify these species. They are: Cat. No. 187149, three specimens (Coll. No. 696). Cat. No. 249789, three specimens (Coll. No. 1061). Cat. No. 250521, one specimen (Coll. No. 1394). Cat. No. 250522, one specimen (Coll. No. 1395). Cat. No. 250523, one specimen (Coll. No. 1396).

Family TURRITELLIDAE.

Genus TURRITELLA Lamarck.

TURRITELLA PUNCTICULATA Sewerby.

Cat. No. 225, U.S.N.M., one specimen collected by William Stimpson on the North Pacific Exploring Expedition at False Bay, Cape of Good Hope. Cat. No. 250406, U.S.N.M., contains a young specimen from Port Alfred (Coll. No. 1279).

TURRITELLA CARINIFERA Lamarck.

Cat. No. 187, U.S.N.M., four specimens collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay, Cape of Good Hope. Cat. No. 43015, U.S.N.M., three specimens from Cape of Good Hope. Cat. No. 77223, U.S.N.M., two specimens collected by Dr. Newcomb at Cape of Good Hope. Cat. No. 186809, U.S.N.M., three specimens from Port Alfred (Coll. No. 175). Cat. No. 17246, U.S.N.M., three specimens from the Cape of Good Hope.

TURRITELLA ANNULATA Kiener.

Cat. No. 187040, U.S.N.M., one specimen from Port Alfred (Coll. No. 577). Cat. No. 250407, U.S.N.M., contains an additional specimen from Port Alfred (Coll. No. 1280).

TURRITELLA STIMPSONI, new species.

Plate 5, fig. 8.

Shell very elongate-conic, yellowish white, streaked at irregular intervals with light brown. Nuclear whorls 1½, well rounded, smooth. Postnuclear whorls appressed at the summit, having two very strong spiral cords, the first of which is on the middle of the whorl, while the second is half way between this and the suture. A third slender thread is situated half way between the two cords and the suture. The portion of the shell between the summit and the first spiral keel forms a slightly concave shoulder, while the space between the two keels forms a deep, broad, concave channel, the space between the second keel and the suture being likewise somewhat concave. In addition to the above sculpture, the entire surface of the spire is marked with fine incremental lines and very fine, closely spaced, spiral striations. Periphery of the last whorl well angulated by a

and cord which is a little less strong than those occurring on the
 1. Base short, almost flattened, marked with lines of growth
 exceedingly fine, spiral striations. Aperture irregular, subquad-
 somewhat effuse at the junction of the basal wall with the outer
 posterior angle obtuse; outer lip very thin, rendered sinuous by
 external sculpture, which is shown within by transmitted light;
 nella very slender, decidedly curved, and slightly reflected over
 appressed to the base; parietal wall covered with a thin callus.
 e type and seven additional specimens, Cat. No. 193, U.S.N.M.,
 collected by William Stimpson on the North Pacific Exploring
 expedition at Simons Bay. The type has $14\frac{1}{2}$ whorls, and meas-
 Length, 20.5 mm.; diameter, 5.8 mm.

TURRITELLA KOWIENSIS Sowerby.

Our lots of this species are in the collection of the United States
 National Museum, all from Port Alfred. Cat. No. 186809, one speci-
 (Coll. No. 175). Cat. No. 187038, two specimens (Coll. No. 575).
 No. 187039, two specimens (Coll. No. 576). Cat. No. 250405,
 specimen (Coll. No. 1278).

TURRITELLA CAPENSIS Krauss.

t. No. 19317, U.S.N.M., one specimen labeled South Africa
 without specific locality designation.

TURRITELLA KNYSNAENSIS Krauss.

t. No. 192, U.S.N.M., two specimens collected by William
 Stimpson on the North Pacific Exploring Expedition at Simons

TURRITELLA, species. ?

t. No. 187041, U.S.N.M., one specimen too poor to be positively
 identified, from Port Alfred (Coll. No. 578).

TURRITELLA, species. ?

t. No. 250397, U.S.N.M., contains the type of a young, very
 slender, white species from Port Alfred, which we are unable to
 identify (Coll. No. 1270).

Family LITTORINIDAE.

Genus LITTORINA Ferussac.

LITTORINA AFRICANA Philippi.

t. No. 18822, U.S.N.M., 3 specimens from Natal. Cat. No.
 18822, U.S.N.M., 110 specimens from Cape of Good Hope. Cat. No.
 18822, U.S.N.M., 8 specimens from the same locality. Cat. No.
 18822, U.S.N.M., 6 specimens from the same place (Coll. No. 177).
 No. 187092, U.S.N.M., 2 specimens from Port Alfred (Coll. No.

LITTORINA AFRICANA TRYPHENA, new subspecies.

Plate 38, fig. 6.

This subspecies of *L. africana* is of similar coloration as *africana*, but always more slender, in fact, pupoid in shape. The type and another specimen, Cat. No. 187091, U.S.N.M., come from Port Alfred (Coll. No. 635). The type has $4\frac{1}{2}$ whorls, and measures: Length, 7 mm.; diameter, 4.6 mm. Four additional lots are in the collection of the United States National Museum from Port Alfred. Cat. No. 187090, one specimen (Coll. No. 634). Cat. No. 250509, two specimens (Coll. No. 1382). Cat. No. 250510, one specimen (Coll. No. 1383). Cat. No. 250511, one specimen (Coll. No. 1384).

LITTORINA KNYSNAENSIS Krauss.

Cat. No. 116, U.S.N.M., six specimens collected by William Stimpson on the North Pacific Exploring Expedition at Cape of Good Hope. Cat. No. 21810, U.S.N.M., one specimen collected at Algoa Bay by Dunker. Cat. No. 98054, U.S.N.M., 84 specimens from the Albany Museum, which were collected at the mouth of Bushmans River. Cat. No. 186810, U.S.N.M., four specimens from Port Alfred (Coll. No. 176). Cat. No. 18795, U.S.N.M., five specimens collected by William Stimpson on the North Pacific Exploring Expedition at Port Elizabeth. Cat. No. 31850, U.S.N.M., five specimens from the Cape of Good Hope.

LITTORINA AHENEA Reeve.

Cat. No. 187089, U.S.N.M., one specimen from Port Alfred (Coll. No. 632).

Genus TECTARIUS Valenciennes.

TECTARIUS NATALENSIS Krauss.

Cat. No. 18823, U.S.N.M., three specimens from Natal.

Genus CITHNA A. Adams.

CITHNA AFRICANA, new species.

Plate 21, fig. 5.

Shell very minute, subglobular, moderately, deeply umbilicated, semitranslucent. Nuclear whorls about one and a third, scarcely differentiated from the rest of the turns. All the whorls well rounded, without sculpture, separated by a moderately constricted suture. Periphery and base of the last whorl well rounded, the latter moderately umbilicated, the outer edge of the umbilicus angulated. Aperture oval; outer lip rather thick, thinning toward the edge; the inner lip oblique, joined with a thin callus on the parietal wall, which renders the peritreme complete.

The type, Cat. No. 250498, U.S.N.M., comes from Port Alfred (Coll. No. 1371). It has almost three postnuclear whorls, and measures: Length, 0.7 mm.; diameter, 0.7 mm.

Family LITIOPIDAE.

Genus ALABA A. Adams.

ALABA PINNAE Krauss.

There are three lots of this species in the United States National Museum, all from Port Alfred. Cat. No. 186813, seven specimens (No. 179). Cat. No. 187052, eight specimens (Coll. No. 590). No. 250413, one specimen (Coll. No. 1286).

Genus ALABINA Dall.

ALABINA ALFREDENSIS, new species.

Plate 5, fig. 7.

Shell elongate-conic, white. Nuclear whorls about two and one-half, smooth, well rounded. Postnuclear whorls with a strong girdle shoulder which extends over the posterior half of the whorls, bounded anteriorly by a median spiral keel. A second keel, a little less strong than the median, occupies the space halfway between the girdle and the median keel. In addition to the above sculpture whorls are marked on the anterior half, between the sutures, by inclined axial ribs which lend the two keels a slightly tuberculated appearance. About twelve of these feeble tubercles occur upon the penultimate whorls. Periphery and base of the last whorl well rounded, the latter smooth, excepting feeble lines of growth. Aperture moderately large; outer lip thin; columella slightly curved and slightly revolute; parietal wall glazed with a thin callus.

Type, Cat. No. 187053, U.S.N.M., comes from Port Alfred (Coll. No. 91). It has nine and one-half post-nuclear whorls, and measures Length, 3.2 mm.; diameter, 1.2 mm.

ALABINA AFRICANA, new species.

Plate 12, fig. 1.

Shell small, elongate-conic, semitransparent, white. Nuclear whorls one and a half, well rounded, separated by a strongly constricted suture, and marked by four strong, equal and equally spaced, spiral keels. Postnuclear whorls well rounded, marked by almost equal, well rounded, quite regular, axial ribs, of which 14 occur upon the first and second, 16 upon the third and fourth, 18 upon the fifth and the penultimate turn. In addition to the axial ribs, the whorls are marked by two spiral cords a little anterior and posterior to the middle of the space between the sutures. The junction of the axial ribs and the spiral cords forms tubercles, which are truncated posteriorly and slope gently anteriorly, while the spaces inclosed between the ribs appear as well impressed pits. Sutures strongly constricted. The suture of the last whorl marked by a strong, smooth, spiral cord. The aperture short, slightly concave, smooth. Aperture subcircular; pos-

terior angle decidedly obtuse; outer lip thin, showing the external sculpture within, which renders the outer lip sinuous at the edge; columella oblique, very thin, and slightly revolute.

The type, Cat. No. 250396, U.S.N.M., comes from Port Alfred (Coll. No. 1269). It has seven postnuclear whorls, and measures: Length, 2 mm.; diameter, 0.7 mm.

Genus *DIALA* A. Adams.

DIALA INFRASULCATA Sowerby.

Three specimens, Cat. No. 187070, U.S.N.M., from Port Alfred (Coll. No. 608). Cat. No. 187071, three specimens from Port Alfred (Coll. No. 609).

DIALA AFRICANA, new species.

Plate 6, fig. 1.

Shell elongate-conic, subdiaphanous. Nuclear whorls scarcely differentiated from the postnuclear turns. Postnuclear whorls strongly rounded, marked by numerous lines of growth and exceedingly fine spiral striations; the summits of the whorls are appressed to the preceding turns and allow these to shine through them, which gives the shell the aspect of having a double suture; sutures strongly constricted. Periphery of the last whorl somewhat inflated, well rounded. Base broadly umbilicated, well rounded, marked like the spire. Aperture large; outer lip thin, translucent; inner lip free, strongly curved, and somewhat reflected over the umbilicus; parietal wall glazed by a thin callus.

The type, Cat. No. 187063, U.S.N.M., comes from Port Alfred (Coll. No. 601). It has seven and one-half whorls, and measures: Length, 4.8 mm.; diameter, 2.1 mm.

The following specimens from Port Alfred are in the collection of the United States National Museum: Cat. No. 187067, one specimen (Coll. No. 605). Cat. No. 227746, three specimens (Coll. No. 841). Cat. No. 249722, two specimens (Coll. No. 994). Cat. No. 250424, three specimens (Coll. No. 1297). Cat. No. 250434, two specimens (Coll. No. 1307). In addition to these I have seen two lots, also from Port Alfred: (Coll. No. 1599), two specimens and (Coll. No. 1593), 30 specimens, which were returned to Colonel Turton.

DIALA DUBIA Sowerby.

The United States National Museum has seven lots of this species from Port Alfred. Cat. No. 186812, 5 specimens (Coll. No. 178). Cat. No. 187060, 2 specimens (Coll. No. 598). Cat. No. 187464, 1 specimen (Coll. No. 602). Cat. No. 187065, 2 specimens (Coll. No. 603). Cat. No. 227744, 3 specimens (Coll. No. 839). Cat. No. 249725, 2 specimens (Coll. No. 997). Cat. No. 250430, 2 specimens (Coll. No. 1303). Cat. No. 250433, 2 specimens (Coll. No. 1305). Cat. No. 252202, 15 specimens (Coll. Nos. 1591 and 1597). (In addi-

tion to these I have seen four lots which have been returned to Colonel Turton, all from Port Alfred; they are: (Coll. No. 1591) 45 specimens. (Coll. No. 1595) 14 specimens. (Coll. No. 1597) 172 specimens. (Coll. No. 1598) 44 specimens.

DIALA CAPENSIS, new species.

Plate 6, fig. 10.

Shell small, subcylindric, pupiform, semitranslucent, pale yellow. Nuclear whorls not differentiated from the postnuclear turns. Post-nuclear whorls somewhat inflated, appressed at the summit, through which the preceding whorl is visible, which lends the shell the appearance of having a double suture. The entire surface of the shell is marked by numerous retractive lines of growth and exceedingly fine spiral striations. Sutures strongly constricted. Periphery of the last whorl rounded. Base well rounded, narrowly umbilicated. Aperture moderately large, oval, outer lip very thin; inner lip strongly curved and slightly reflected over the umbilicus. Parietal wall covered with a thin callus.

The type, Cat. No. 187068a, comes from Port Alfred. (Coll. No. 606.) It has six and one-half postnuclear whorls, and measures: Length, 2.5 mm.; diameter, 1.1 mm.

DIALA ALMO, new species.

Plate 6, fig. 2.

Shell minute, broadly conic, with truncated apex, semitranslucent. Nuclear whorls not differentiated from the postnuclear turns. Post-nuclear whorls feebly rounded, appressed at the summit, through which the preceding turn shows, lending the surface the aspect of having a double suture. Entire surface of the shell marked by fine lines of growth. Sutures feebly impressed. Periphery of the last whorl strongly inflated. Base well rounded, broadly umbilicated. Aperture very large; ovate; posterior angle obtuse; outer lip thin, decidedly flaring; inner lip curved and somewhat flexuous, slightly reflected over the umbilicus; parietal wall distinct, rendering the peritreme complete.

The type, Cat. No. 187066, U.S.N.M. comes from Port Alfred, (Coll. No. 604). It has five whorls, and measures: Length, 2 mm.; diameter, 1.2 mm. We have seen seven additional specimens from Port Alfred (Coll. No. 593), which have been returned to Colonel Turton.

Family SOLARIIDAE.

Genus *HELIACUS* Orbigny.

HELIACUS AFRICANUS, new species.

Plate 24, figs. 1, 3, 5.

Shell lenticular, brown, blotched and spotted with white and yellow. Nuclear whorls about one and a half, smooth; upper surface

of the succeeding turns slightly rounded, ornamented with five nodulose spiral cords, of which the first, at the summit, and the last, at the periphery, are the widest, the three intermediate ones being of about equal width. The spaces separating these spiral cords are strongly incised, narrow channels. In addition to the spiral cords, the whorls are marked by low, retractive, axial ribs, of which 67 occur upon the last turn. The junction of the axial ribs and the spiral cords, form low, rounded, elongated tubercles, the long axis of which corresponds with the axial sculpture. Base moderately rounded, marked with low spiral cords, of which the two adjacent to the umbilicus are about doubly as wide as the rest; the one bordering the umbilicus renders the edge of this crenulated. In addition to these spiral cords the base is marked by the continuation of the axial ribs, the junction of which, with the spiral cords, renders these nodulose. The nodules, on the two cords near the umbilicus are elongate, having the long axis parallel with the spiral sculpture, while those on the rest of the cords are more or less rounded. There is a deep sinus between the peripheral cord and the basal cord, fully twice as wide as any of the sulci on the rest of the spire. Two slender spiral threads are present in the sulcus. The parietal wall of the umbilicus is marked with two moderately strong spiral cords. Aperture subcircular, rendered somewhat sinuous by the external sculpture; columella very stout, provided with two low, rounded, spiral cords which divide it into two equal parts.

The type and another specimen, Cat. No. 249757, U.S.N.M., came from Port Alfred (Coll. No. 1029). The type has almost four post-nuclear whorls and measures: Greatest diameter, 9.6 mm.; lesser diameter, 9 mm.; altitude, 4.6 mm. Cat. No. 186824, U.S.N.M., contains two additional specimens from the same locality (Coll. No. 190). Cat. No. 249758, U.S.N.M., contains two specimens from the same source (Coll. No. 1030).

There is considerable variation in the width of the umbilicus of this species, the following two having an umbilicus fully twice as wide as the specimens alluded to above. In addition to this increased width of umbilicus, they also have a little larger number of axial riblets. Cat. No. 249756, U.S.N.M., one specimen from Port Alfred (Coll. No. 1028). Cat. No. 186823, U.S.N.M., another specimen from the same place (Coll. No. 189). Cat. No. 250560a, U.S.N.M., contains a very young tip of another specimen from the same place (Coll. No. 1433a).

HELIACUS LUTEUS Lamarck.

Cat. No. 102725, U.S.N.M., a specimen from the Cape of Good Hope.

HELIACUS, species?

Cat. No. 250502, U.S.N.M., contains a young *Heliacus* from Port Alfred which is smooth, excepting a band at the periphery and two

se, spiral zones about the umbilicus. I am unable to identify any of the described species, and it is too worn to serve for diagnosis of a new form. (Coll. No. 1375.) Cat. No. 187095, M., contains another specimen from the same place. (Coll. 9.)

Family RISSOIDAE.

Genus NODULUS Monterosato.

NODULUS PERSPECTUS Smith.

No. 186819, U.S.N.M., two specimens from Port Alfred No. 185).

NODULUS AFRICANUS, new species.

Plate 31, fig. 5.

1 cylindro-conic, white. Nuclear whorls one and a third, h, polished, well rounded. Postnuclear whorls rather high between the sutures, appressed at the summit, well rounded, excepting as immediately below the appressed summit on the later turns, is slightly concave. Entire surface marked by numerous, very spaced, microscopic, spiral striations and exceedingly fine, reverse lines of growth. Periphery of the last whorl well rounded; prolonged, moderately rounded; aperture subcircular; outer lip within shelving to a thin edge; inner lip reflected, almost verparietal wall covered by a thick callus which renders the pericomplete.

type, Cat. No. 250422, U.S.N.M., comes from Port Alfred No. 1295). It has $4\frac{1}{2}$ postnuclear turns and measures: Length, n.; diameter, 0.6 mm. The present species differs from *Nodulus* *etus* Smith by being cylindro-conic, instead of ovate, as well other characters.

Genus SABANAEA Monterosato.

SABANAEA PYRRHA, new species.

Plate 6, fig. 7.

11 minute, ovate. Early whorls pale smoky brown, the later white. Nuclear whorls apparently not differentiated from the nuclear turns. All the whorls well rounded, smooth, and appressed at the summit. Sutures feebly impressed. Periphery of the whorl obscurely angulated. Base short, almost concave in outpressed at the umbilical area, and slightly attenuated anteriorly. Aperture subcircular, with a very thick peristome. Posterior obtuse; outer lip thick; inner lip very thick, curved and appressed to the base; parietal wall covered with a thick callus, which extends from the posterior angle of the aperture to the inner lip.

The type and two specimens, Cat. No. 187062, U.S.N.M., come from Port Alfred (Coll. No. 600). The type has four postnuclear whorls, and measures: Length, 1.3 mm.; diameter, 1 mm. Cat. No. 250427, U.S.N.M., contains two specimens from Port Alfred (Coll. No. 1300).

SABANAEA THALIA, new species.

Plate 6, fig. 6.

Shell pupiform, with blunt apex, subdiaphanous. Nuclear whorls not differentiated from the later turns; all whorls strongly rounded and appressed at the summit, through which the preceding whorl shines, which gives the whorls the aspect of having a double suture. Spire marked with decidedly retractive lines of growth, and exceedingly fine, spiral striations. Sutures moderately constricted. Periphery of the last whorl well rounded. Base moderately long, umbilicated, well rounded, slightly attenuated anteriorly, marked like the spire. Aperture subcircular, posterior angle obtuse; outer lip thin; inner lip thin, strongly curved, free, slightly reflected over the umbilicus; parietal wall covered with a thick callus, which is free at the edge, and renders the peritreme complete. The type and two specimens, Cat. No. 187058, U.S.N.M., come from Port Alfred (Coll. No. 596). The type has six whorls, and measures: Length, 1.7 mm.; diameter, 0.8 mm. Cat. No. 227742a, U.S.N.M., contains two specimens from the same locality (Coll. No. 837), and Cat. No. 227743, U.S.N.M., seven specimens from the same source (Coll. No. 838). In addition to these, we have seen 105 specimens from Port Alfred which have been returned to Colonel Turton (Coll. No. 1594).

Genus *AMPHITHALAMUS* Carpenter.

AMPHITHALAMUS TURTONI, new species.

Plate 6, fig. 5.

Shell very minute, pupiform, pale horn color. Nuclear whorls one and one-half, marked with many, exceedingly fine, spiral striations and lines of growth, the combination of the two lending these whorls an exceedingly finely pitted appearance. Postnuclear whorls rather high between the sutures, appressed at the summit, well rounded, marked by fine, decidedly retractive lines of growth. Sutures strongly constricted. Periphery of the last whorl well rounded. Base attenuated anteriorly, marked like the spire. Aperture oval; outer lip thick within, thin at the edge; inner lip decidedly curved; parietal wall built out to form a shelf, the inner edge of which forms the parietal lip of the aperture.

The type and nine specimens of this species, Cat. No. 187061, U.S.N.M., were collected at Port Alfred (Coll. No. 599). The type has a little more than four whorls, and measures: Length, 1 mm.; diameter, 0.5 mm.

Two additional lots, both from Port Alfred, are in the collection of the United States National Museum. Cat. No. 250416, one specimen (Coll. No. 1289), the other Cat. No. 250417, one specimen (Coll. No. 1290).

AMPHITHALAMUS AFRICANUS, new species.

Plate 21, fig. 6.

Shell minute, elongate-conic, semitransparent. Nuclear whorls one and a half, well rounded, smooth. Postnuclear whorls almost three, strongly rounded, appressed at the summit, marked by numerous, regular, fine, decidedly retractive axial riblets, the spaces between which are about one and a half times as wide as the riblets. Sutures strongly constricted. Periphery of the last whorl well rounded. Base somewhat produced, marked like the spire by the continuations of the riblets. Aperture broadly oval, decidedly oblique; outer lip thin; inner lip strongly curved at some little distance from the parietal wall. The space between the inner edge of the outer lip and the parietal wall form a shelf, as is usual in *Amphithalamus*.

The type, Cat. No. 250415, U.S.N.M., comes from Port Alfred (Coll. No. 1288). It measures: Length, 1.2 mm.; diameter, 0.5 mm.

Genus *ALVANIA* Risso.

ALVANIA NEMO, new species.

Plate 5, fig. 3.

Shell small, elongate-ovate, yellowish white. Nuclear whorls one and one-half, well rounded, smooth. Postnuclear whorls inflated, strongly rounded, marked between the sutures by very regular, well developed, evenly spaced spiral cords, of which four occur upon the second and third, and 6 upon the penultimate turn. The space between the appressed summit and the first spiral cord is a little wider than those between the other cords. In addition to the spiral cords the whorls are marked by feeble incremental lines. Periphery of the last whorl inflated. Base moderately long, well rounded, narrowly umbilicated, marked with two, feeble, spiral cords and fine, incremental lines. Aperture broadly oval; posterior angle obtuse; outer lip thin, showing the external sculpture within; columella strongly curved, free, partly reflected over the umbilicus; parietal wall glazed with a thin callus.

The type, Cat. No. 187057a, U.S.N.M., comes from Port Alfred (Coll. No. 595). It has almost four postnuclear whorls, and measures: Length, 1.8 mm.; diameter, 1 mm.

The following four additional lots from Port Alfred are in the collection of the United States National Museum. Cat. No. 250403, two specimens (Coll. No. 1276). Cat. No. 250402, two specimens.

(Coll. No. 1275). Cat. No. 250401, two specimens (Coll. No. 1274). Cat. No. 252277, 10 specimens (Coll. No. 1586). Thirty-five specimens with the same collector's number were returned to Colonel Turton.

ALVANIA FAROUHARI Smith.

Plate 5, fig. 5.

Cat. No. 187057, U.S.N.M., two specimens from Port Alfred (Coll. No. 595). Cat. No. 227740, U.S.N.M., three specimens from the same locality (Coll. No. 835). In addition to these, I have seen 40 specimens in Colonel Turton's collection (Coll. No. 1586).

ALVANIA ALFREDENSIS, new species.

Plate 21, fig. 8.

Shell elongate-conic, white. The nucleus consists of a single turn which appears to be smooth. The succeeding turn is well rounded, the next, strongly shouldered on the middle, while the last is slightly concave immediately below the suture, and the rest well rounded. The second whorl is marked with six slender spiral cords, which are about as wide as the spaces that separate them. On the following turn a broad cord appears at the appressed summit and four slender ones on the space between the summit and the angulated shoulder; the shoulder itself being marked by a stronger spiral cord, while the space anterior to it bears three about as strong as the last. On the penultimate whorl 12, equal and equally spaced, spiral cords appear between the summit and the posterior termination of the outer lip, and six upon the base. These cords are equal and equally spaced and are about as wide as the spaces that separate them. Aperture apparently oval; outer lip fractured; inner lip rather thick, almost vertical, and somewhat reflected over the base; parietal wall covered by a moderately thick callus.

The type, Cat. No. 250392, U.S.N.M., comes from Port Alfred (Coll. No. 1265). It has four postnuclear whorls, and measures: Length, 1.5 mm.; diameter, 0.6 mm.

ALVANIA ALMO, new species.

Plate 21, fig. 7.

Shell elongate-ovate, thin, semitranslucent. Nuclear whorls one and a half, well rounded, smooth. Postnuclear turns marked by two strong, spiral keels, the first of which is situated about two-thirds of the distance between the summit and the suture anterior to the summit, while the second is about one-fifth of the distance above the suture, leaving the space between the two, equal to about two-fifths of the distance. The space between the summit and the first keel, forms a strongly sloping shoulder, while the space between the two

keels is almost flat. Periphery of the last whorl marked by a strong, spiral cord. Base well rounded, marked by three subequal and equally spaced, low, spiral cords. In addition to the spiral marking, the whorls are marked by numerous, very fine lines of growth. Aperture broadly ovate; posterior angle obtuse; outer lip thin, showing the external sculpture within; inner lip thin, slightly reflected; parietal wall covered with a thick callus which renders the peritreme complete.

The type, Cat. No. 250394, U.S.N.M., comes from Port Alfred (Coll. No. 1267). It has three postnuclear whorls, and measures: Length, 2.1 mm.; diameter, 1.3 mm.

ALVANIA ARGENTEA Sowerby.

Four lots of this species are in the collection of the United States National Museum, all from Port Alfred. Cat. No. 186820, two specimens (Coll. No. 186). Cat. No. 250393, one specimen (Coll. No. 1266). Cat. No. 250403a, one specimen (Coll. No. 1276). Cat. No. 252279, 25 specimens (Coll. No. 1588). In addition to these we have seen 15 specimens in Colonel Turton's collection (Coll. No. 1587), and 87 specimens in the same collection (Coll. No. 1588).

ALVANIA FENESTRATA Krauss.

Three lots of this species are in the collection of the United States National Museum, all from Port Alfred. Cat. No. 186818, five specimens (Coll. No. 184). Cat. No. 252278, 25 specimens (Coll. No. 1588). In addition to that we have seen 111 specimens which have been returned to Colonel Turton (Coll. No. 1587).

ALVANIA IMA, new species.

Plate 5, fig. 2.

Shell small, ovate, yellowish white. Nuclear whorls two, well rounded, smooth. Postnuclear whorls slightly rounded, marked by very regular, feeble, protractive axial ribs which are a little wider than the spaces that separate them. Of these ribs, 26 occur upon the first, 30 upon the second, and 32 upon the penultimate whorl. In addition to the ribs, the whorls are marked by a slender spiral cord at the summit, which renders the summit decidedly crenulated. A second spiral cord marks the periphery of the turns; the intercostal spaces between these spiral cords are wedge-shaped, the angle of the wedge being at the summit. Base somewhat inflated, well rounded, marked on the posterior two-thirds by six strongly incised spiral grooves, which make the spaces between them appear as broad, low rounded keels. Sutures strongly impressed. Aperture irregularly oval; outer lip moderately thick, showing the external sculpture within; inner lip almost straight, oblique; parietal wall covered with a thick callus.

The type, Cat. No. 187669, U.S.N.M., comes from Port Alfred (Coll. No. 607). It has almost four postnuclear whorls and measures: Length, 2.3 mm.; diameter, 1.5 mm. Cat. No. 249704 U.S.N.M., contains another specimen from Port Alfred (Coll. No. 976).

Genus *RISSOINA* Orbnigny.

RISSOINA ALFREDI Smith.

Cat. No. 186816, U.S.N.M., two specimens from Port Alfred (Coll. No. 182).

RISSOINA CALIA, new species.

Plate 5, fig. 1.

Shell elongate-conic, bluish white. Nuclear whorls decollated. Postnuclear whorls moderately rounded, strongly appressed at the summit, which lends them a somewhat curved outline near the summit; marked with numerous, very regular, slender, flexuous axial ribs, of which 26 occur upon the first, 32 upon the second, 36 upon the third and fourth, 40 upon the fifth, and 46 upon the penultimate turn. The moderately impressed spaces enclosed between these ribs are about as wide as the ribs, and are crossed by slender spiral threads, of which about 13 occur between the sutures. The spaces enclosed between the spiral threads and the axial ribs are a little wider than the spiral threads and appear as well-impressed pits. Periphery of the last whorl well rounded. Base somewhat prolonged, well rounded, marked by the continuations of the axial ribs, which become somewhat enfeebled anteriorly and 16 spiral threads; the latter are a little more accentuated on the anterior portion than they are upon the spire. Aperture irregularly ovate, somewhat channeled anteriorly; posterior angle acute; outer lip moderately thick, showing the external sculpture within; inner lip scarcely differentiated from the body whorl, to which it is appressed; parietal wall covered with a thin callus.

The type, and four specimens, Cat. No. 186817, U.S.N.M., come from Port Alfred (Coll. No. 183). The type has seven postnuclear whorls, which measure: Length, 6.7 mm.; diameter, 2.2 mm. Cat. No. 227738, U.S.N.M., contains 10 specimens from the same locality (Coll. No. 833), and Cat. No. 227739, contains six specimens from the same source (Coll. No. 834).

Cat. No. 249707a, U.S.N.M., contains a badly worn specimen (Coll. No. 979).

RISSOINA, species?

Cat. No. 249696, U.S.N.M., contains a badly worn specimen of a small species from Port Alfred, having closely spaced, decidedly protractive ribs and without spiral sculpture. It is too badly worn to serve for a proper diagnosis (Coll. No. 968).

●
RISSOINA EUCOSMIA, new species.

Plate 20, fig. 2.

Shell small, falcate, semitranslucent. Nuclear whorls a little more than one, smooth, well rounded. Postnuclear whorls high between the sutures, strongly shouldered at the summit, marked on the anterior half by strong, comma-shaped axial ribs, which are truncated posteriorly, tapering gently anteriorly and are lost before they reach the middle of the whorl. Of these ribs, 12 occur upon the first, 14 upon the second, 16 upon the third, and 18 upon the fourth and penultimate turn. In addition to these axial ribs the whorls are marked between the sutures by a smooth spiral cord, the posterior border of which marks the space between the sutures on the later turns. Sutures strongly channeled. Periphery of the last whorl marked by a strong spiral cord. Base moderately long, marked by two, equal and equally spaced, spiral cords, of which the last encircles the insertion of the columella. Aperture oval; outer lip thick, with a brown band immediately posterior to the spiral keel; inner lip very thick and appressed to the attenuated base; parietal wall covered by a moderately thick callus which renders the peritreme complete.

The type, Cat. No. 250395, U.S.N.M., comes from Port Alfred (Coll. No. 1268). It has five and a half postnuclear whorls, and measures: Length, 2.8 mm.; diameter, 1.1 mm.

RISSOINA, species?

Cat. No. 250372, U.S.N.M., contains the tips of two *Rissoinas*, from Port Alfred, too young to be determined (Coll. No. 1245).

Cat. No. 250400, U.S.N.M., contains a *Rissoina* from Port Alfred, which is different from any of the known species, but too poor to serve for a diagnosis (Coll. No. 1273).

RISSOINA (PHOSINELLA) PURA Gould.

Plate 5, fig. 10.

Alvania pura GOULD, Proc. Bost. Soc. Nat. Hist., vol. 7, p. 402, 1861.

Shell elongate-conic, white. Nuclear whorls two, well rounded, smooth. Postnuclear whorls well rounded, marked by almost vertical narrow axial ribs which are about one-half as wide as the spaces that separate them. Of these ribs 12 occur upon the first, 18 upon the second to fourth, 20 upon the fifth, 22 upon the sixth, and 26 upon the penultimate whorl. In addition to the axial ribs the whorls are marked by equal and equally spaced spiral cords which are almost as strong on the ribs, the junctions of the two forming strong, rounded tubercles. Of these cords, 2 occur upon the first, 3 upon the second to fourth, and 5 upon the remaining turns. The spaces

enclosed by the ribs and cords are deep rectangular pits, having their long axis parallel with the spiral sculpture. Periphery well rounded. Base moderately protracted, marked by the continuations of the axial ribs which become much enfeebled as they approach the columella, and six spiral cords, of which the posterior two are of the strength and spacing of those on the spire, while the other four are separated from these two by a space about one and one-half times as wide as the spaces between the cords on the spire, and are much closer approximated to each other than the rest. These four are successively weaker from the posterior to the anterior, the latter becoming quite feeble. Aperture irregularly oval, oblique, partly channeled anteriorly; posterior angle obtuse; outer lip reenforced by a heavy callus; parietal wall covered by a thick callus.

Doctor Gould's type, Cat. No. 157, U.S.N.M., was collected by William Stimpson, on the North Pacific Exploring Expedition, in Simons Bay. It has eight postnuclear whorls, and measures: Length, 5.8 mm.; diameter, 2.1 mm.

Genus MICROSETIA Monterosato.

MICROSETIA CONSPECTA Smith.

Cat. No. 186821, U.S.N.M., one specimen from Port Alfred (Coll. No. 187).

MICROSETIA GISNA, new species.

Plate 6, fig. 4.

Shell small, ovate, light golden brown, excepting the extreme anterior portion of the base and the peristome, which are yellowish white. Nuclear whorls one and one-half, inflated, smooth, giving the shell a blunt apex. Postnuclear whorls moderately rounded, feebly shouldered at the summit, marked by fine incremental lines only. Sutures moderately impressed. Periphery of the last whorl somewhat inflated, well rounded. Base moderately long, well rounded, narrowly umbilicated, marked like the spire. Aperture ovate; posterior angle acute; outer lip thin at the edge; inner lip strongly curved and partly reflected over the umbilicus; parietal wall covered with a thin callus.

The type, Cat. No. 187055, U.S.N.M., comes from Port Alfred (Coll. No. 593). It has almost four postnuclear whorls, and measures: Length, 2 mm.; diameter, 1 mm.

MICROSETIA HALIA, new species.

Plate 6, fig. 8.

Shell small, broadly ovate, light brown. Nuclear whorls not differentiated from the postnuclear turns. Postnuclear whorls well rounded, appressed at the summit, through which the preceding whorl can be seen, which lends the shell the appearance of having a rather broad brown band at the summit; surface of the shell marked by

numerous, decidedly retractive, incremental lines and exceedingly fine spiral striations. Sutures moderately impressed; periphery of the last whorl inflated, well rounded; base short, narrowly umbilicated, well rounded. Aperture subcircular; posterior angle obtuse; outer lip thin; inner lip strongly curved and partly reflected over the umbilicus, continuing as a thin callus over the parietal wall.

The type and seven specimens, Cat. No. 187072, U.S.N.M., came from Port Alfred (Coll. No. 610). The type has a little more than five whorls, and measures: Length, 2.1 mm.; diameter, 1.1 mm. Cat. No. 227745, U.S.N.M., contains three specimens from the same locality (Coll. No. 840). Another specimen, Cat. No. 250428, U.S.N.M., also comes from Port Alfred (Coll. No. 1301).

MICROSETIA HELGA, new species.

Plate 6, fig. 3.

Shell small, elongate-conic, yellowish white. Nuclear whorls not differentiated from the succeeding turns; all the whorls well rounded, appressed at the summit, through which the preceding whorl shines, which lends the shell the aspect of having a double suture. Sutures moderately impressed. Periphery of the last whorl somewhat inflated, well rounded. Base moderately long, narrowly umbilicated, well rounded; entire surface of spire and base marked by exceedingly fine incremental lines only. Aperture oval; posterior angle obtuse; outer lip thick; inner lip strongly curved and quite thick, reflected over the umbilicus; parietal wall covered with a thick callus.

The type and another specimen, Cat. No. 187056, U.S.N.M., came from Port Alfred (Coll. No. 594). The type has six whorls and measures: Length, 2.7 mm.; diameter, 1.5 mm. Cat. No. 250423, U.S.N.M., contains another specimen from Port Alfred (Coll. No. 1296).

MICROSETIA IRMA, new species.

Plate 21, fig. 9.

Shell elongate-ovate, very thin, transparent. Nuclear whorls not differentiated from the postnuclear turns. Postnuclear whorls well rounded, appressed at the summit, marked by exceedingly fine, retractive lines of growth and closely spaced, microscopic spiral striations. Sutures moderately constricted. Periphery of the last whorl strongly rounded. Base moderately long, strongly rounded, very narrowly umbilicated. Aperture ovate; posterior angle acute; outer lip very thin; inner lip very thin, evenly curved and slightly reflected; parietal wall glazed with a thin callus.

The type and another specimen, Cat. No. 249724, U.S.N.M., come from Port Alfred (Coll. No. 996). The type has four whorls, and measures: Length, 1.6 mm.; diameter, .1 mm.

Genus *BARLEEIA* Clark.*BARLEEIA SMITHI*, new species.

Plate 10, fig. 5.

Shell broadly ovate, light chestnut brown, with the parietal wall and the inner edge of the columella dark chestnut. Nuclear whorls not differentiated from the rest of the shell. Postnuclear whorls rounded, marked by decidedly retractive lines of growth and exceedingly fine, closely spaced, microscopic spiral striations. Sutures strongly constricted. Periphery of the last whorl inflated, strongly rounded. Base short, strongly rounded, umbilicated, marked like the spire. Aperture subcircular; outer lip thin; columella moderately thick, slightly reflected; parietal wall covered by a thick callus, which renders the peritreme complete.

The type and three other specimens, Cat. No. 227741, U.S.N.M., come from Port Alfred (Coll. No. 836). The type has four whorls and measures: Length, 1.5 mm.; diameter, 0.9 mm.

Genus *FENELLA* A. Adams.*FENELLA ALMO*, new species.

Plate 31, fig. 4.

Shell elongate-conic, milk white, rather thick. Nuclear whorls smooth, well rounded. Postnuclear whorls well rounded, marked by a strong, median, spiral keel and another a little less strong at the periphery. These keels become more strongly developed on the last turn than on the preceding turns. In addition to these, there are numerous, very fine, spiral threads between the keels and also upon them, which are crossed by equally fine axial threads, lending the entire surface a finely reticulated appearance. There are also a few irregularly disposed, low, ill-defined axial riblets, which are best shown on the last half of the last whorl. Base well rounded, ornamented like the spire. Aperture thin within, provided with a complete peristome at the edge, which is greatly thickened and built out, and slightly reflected all around.

The type, Cat. No. 249708, U.S.N.M., comes from Port Alfred (Coll. No. 980). It measures: Length, 7.1 mm.; diameter, 2.6 mm.

Family *JEFFREYSIIDAE*.Genus *JEFFREYSIA* Alder.*JEFFREYSIA CAFFRA* Sewerky.

Cat. No. 186822, U.S.N.M. Three specimens from Port Alfred (Coll. No. 188). Cat. No. 249721, U.S.N.M., contains two specimens from the same locality (Coll. No. 993).

JEFFREYSIA CAPENSIS Sowerby.

Seven lots of this species are in the collection of the United States National Museum, all from Port Alfred. Cat. No. 187059, six specimens (Coll. No. 597). Cat. No. 187068, one specimen (Coll. No. 606). Cat. No. 186812*a*, one specimen (Coll. No. 178*a*). Cat. No. 187063*a*, two specimens (Coll. No. 601). Cat. No. 250431, two specimens (Coll. No. 1304). Cat. No. 249723, one specimen (Coll. No. 995). In addition to these we have seen 67 specimens in Colonel Turton's collection. (Coll. No. 1592).

Family ASSIMINEIDAE.

Genus ASSIMINEA Leach.

ASSIMINEA OVATA Krauss.

Three lots of this species are in the collection of the United States National Museum, from Port Alfred, Cat. No. 186814*b*, one specimen (Coll. No. 180). Cat. No. 227735, three specimens (Coll. No. 830). Cat. 249728, two specimens (Coll. No. 1000).

ASSIMINEA UMLAASIANA Smith.

The United States National Museum contains three lots of this species from Port Alfred. Cat. No. 186814, three specimens (Coll. No. 180). Cat. No. 186815, six specimens (Coll. No. 181). Cat. No. 227734, eight specimens (Coll. No. 829). In addition to these I have seen 78 specimens from Port Alfred which have been returned to Colonel Turton (Coll. No. 1596).

ASSIMINEA CAPENSIS, new species.

Plate 6, fig. 9.

Shell broadly conic, thick, light brown. Nuclear whorls not differentiated from the postnuclear turns. Postnuclear whorls well rounded, feebly shouldered at the summit, marked by decidedly retractive lines of growth and exceedingly fine spiral striations. Sutures moderately constricted. Periphery of the last whorl strongly inflated, obscurely angulate. Base short, well rounded, marked like the spire. Aperture very large, irregularly ovate; posterior angle acute; outer lip thick within, thin at the edge; inner lip thick, appressed, strongly curved, continuous with the thick parietal callus.

The type, Cat. No. 186814*a*, U.S.N.M., comes from Port Alfred (Coll. No. 180). It has six whorls, and measures: Length, 6 mm.; diameter, 3.5 mm. Cat. No. 227824 U.S.N.M., contains two specimens from the same locality (Coll. No. 829*a*). Another specimen, Cat. No. 250414, U.S.N.M., is from the same locality (Coll. No. 1287).

ASSIMINEA FASCIATA Krauss.

Cat. No. 187051, U.S.N.M. Five specimens from Port Alfred (Coll. No. 589). Cat. No. 227736, U.S.N.M., four young specimens from the same locality (Coll. No. 831). Cat. No. 227737, U.S.N.M., three very young individuals from the same source (Coll. No. 832).

ASSIMINEA, species?

Cat. No. 250421, U.S.N.M., contains a worn specimen which we are unable to identify, from Port Alfred (Coll. No. 1294).

Family CALYPTRAEIDAE.

Genus TROCHITA Schumacher.

TROCHITA HELICOIDEA Sowerby.

Cat. No. 186827, U.S.N.M., one specimen from Port Alfred (Coll. No. 193).

TROCHITA SINENSIS Linnaeus.

Cat. No. 36, U.S.N.M., one specimen, collected by William Stimpson, on the North Pacific Exploring Expedition, at False Bay, Cape of Good Hope. Cat. No. 139, U.S.N.M., five specimens collected by William Stimpson, on the North Pacific Exploring Expedition, in 20 fathoms, on sandy bottom at False Bay, Cape of Good Hope. Cat. No. 186828, two specimens from Port Alfred (Coll. No. 194).

TROCHITA CALYPTRAEFORMIS Lamarck.

Cat. No. 89868, U.S.N.M., two specimens from the Cape of Good Hope.

Genus CREPIDULA Lamarck.

CREPIDULA ACULEATA Gmelin.

Cat. No. 98023, U.S.N.M., five specimens from Albany. Cat. No. 186825, U.S.N.M., three specimens from Port Alfred (Coll. No. 191). Cat. No. 19175, U.S.N.M., two specimens from the Cape of Good Hope.

CREPIDULA HEPATICA Deshayes.

Cat. No. 89869, U.S.N.M., two specimens from the Cape of Good Hope. Cat. No. 19169, U.S.N.M., three specimens from the Cape of Good Hope. Cat. No. 43146, U.S.N.M., five specimens from the Cape of Good Hope. Cat. No. 98052, U.S.N.M., seven specimens from Albany. Cat. No. 186826, U.S.N.M., two specimens from Port Alfred (Coll. No. 192). Cat. No. 249788, U.S.N.M., contains three specimens from the same locality (Coll. No. 1060). Cat. No. 249787, U.S.N.M., four specimens from the same place (Coll. No. 1059).

CREPIDULA HEPATICA COMPLANATA Krauss.

Cat. No. 187131, U.S.N.M., two specimens from Port Alfred (Coll. No. 677). Cat. No. 250576, U.S.N.M., another specimen from the same source (Coll. No. 1449).

CREPIDULA LENTIGINOSA Sowerby.

Cat. No. 98051, U.S.N.M., three specimens from Albany. Cat. No. 19173, U.S.N.M., one specimen from Port Elizabeth. Cat. No. 186826a, U.S.N.M., one specimen from Port Alfred (Coll. No. 192). Cat. No. 249786, U.S.N.M., four specimens from the same locality (Coll. No. 1058).

Family LAMELLARIIDAE.

Genus LAMELLARIA Montagu.

LAMELLARIA PERSPICUA Linnaeus.

One specimen, Cat. No. 250530, U.S.N.M., from Port Alfred (Coll. No. 1403). Cat. No. 250532, U.S.N.M., one young specimen from the same place (Coll. No. 1405). Cat. No. 249768, U.S.N.M., three young specimens from the same locality (Coll. 1040).

Family NATICIDAE.

Genus NATICA Scopoli.

NATICA IMPERFORATA Gray.

Cat. No. 98024, U.S.N.M., twelve specimens from Kassouga, Albany. Cat. No. 21800, U.S.N.M., one specimen from Algoa Bay. Cat. No. 186829, U.S.N.M., three specimens from Port Alfred (Coll. No. 195).

NATICA STIMPSONI, new species.

Plate 13, figs. 5, 8, 11.

Shell large, subglobose, imperforate, bluish white, speckled with numerous dots of brown over the entire surface, excepting a narrow band on the shoulder of the whorls and another a little anterior to the periphery, which are marked by a series of quite regularly spaced triangles, the apexes of which point forward. The whorls are inflated, slopingly shouldered at the summit, the rest well rounded, marked by numerous strong lines of growth, and fine spiral lirations. Periphery and base of the last whorl well rounded, marked like the spire. Aperture large, oval; outer lip thin; inner lip thick, curved and strongly reflected over the umbilical area; parietal wall covered with a very thick callus, having a notch a little nearer the posterior angle of the aperture than its junction with the inner lip.

The type, Cat. No. 93, U.S.N.M., was collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay, Cape of Good Hope. It has five and one-half whorls, and measures: Length, 38.5 mm.; diameter, 36 mm.

NATICA, species?

Cat. No. 187082, U.S.N.M., three poor specimens from Port Alfred which I am unable to refer to any known form (Coll. No. 624). Cat. No. 249750, U.S.N.M., contains two additional specimens, in an equally poor condition, from the same place (Coll. No. 1022).

NATICA ALFREDENSIS, new species.

Plate 13, figs. 4, 7, 10.

Shell of medium size, irregularly ovate, early whorls bluish, later ones light buff, marked with a series of retractorily sloping streaks of brown near the summit, and numerous small dots of brown. The callus and columellar area are white. Early whorls well rounded, the later ones a little less so. The last whorl is strongly appressed at the summit, which lends it a somewhat pinched-in appearance immediately below the summit. Periphery and base of the last whorl well rounded. Aperture oval; outer lip thin, purplish brown deep within, white at the edge; inner lip strongly curved; parietal wall covered with a very thick callus, which is entire.

The type and two specimens of this species, Cat. No. 187085, U.S.N.M., come from Port Alfred (Coll. No. 627). The type has four and one-half whorls, and measures: Length, 17 mm.; diameter, 14.5 mm. Three additional lots are in the collection of the United States National Museum from the same locality. Cat. No. 249752, three specimens (Coll. No. 1024). Cat. No. 249754, two specimens (Coll. No. 1026). Cat. No. 249748, three specimens (Coll. No. 1020.)

NATICA FORATA Reeve.

Cat. No. 17096, U.S.N.M., one specimen from Cape of Good Hope. Cat. No. 43134, U.S.N.M., eight specimens from the same place. Cat. No. 46445a, U.S.N.M., one specimen from the same locality. Cat. No. 186830, U.S.N.M., four specimens from Port Alfred (Coll. No. 196).

NATICA AFRICANA, new species.

Plate 13, figs. 13, 14, 15.

Shell similar to *N. forata*, but decidedly elevated, and with a much narrower umbilicus. The coloration is as follows: ground color pearl gray; a narrow band, of short, axially disposed streaks of light brown, is situated at the summit; while five, equal and equally spaced, narrow bands encircle the whorls; the first of these is a little farther from the brown band at the summit than from its neighbor anteriorly. These bands are composed of narrow, arrow-shaped elements, which are white, tipped with brown, and are arranged in cone-in-cone series, pointing forward. In addition to these bands, the whorls are marked by alternating lines of light and darker color, which coincide with the lines of growth. The umbilical area and the region adjacent to it, as well as the thin callus, are white, the whorls are well rounded, smooth. Umbilicus narrowly funnel-shaped; umbilical wall provided with two spiral keels. Aperture oval, dark purple within, thin and white at the edge; inner lip curved and very slightly reflected; parietal wall covered with a thin callus.

The type and another specimen of this species, Cat. No. 46445, U.S.N.M., come from the Cape of Good Hope. The type has four and one-half whorls, and measures: Length, 11.3 mm.; diameter, 11 mm. Cat. No. 249753, U.S.N.M., contains another specimen from Port Alfred (Coll. No. 1025).

NATICA NAPUS Smith.

Cat. No. 186832, U.S.N.M., contains one specimen from Port Alfred (Coll. No. 198).

NATICA DECIPIENS Smith.

Cat. No. 186831, U.S.N.M., contains two specimens from Port Alfred (Coll. No. 197).

NATICA QUEKETTI Sowerby.

Cat. No. 46445*b*, U.S.N.M., one specimen from the Cape of Good Hope.

NATICA, species?

Cat. No. 187084, U.S.N.M., contains three specimens from Port Alfred (Coll. No. 626), which we are unable to refer to any of the known species, but they are too worn to permit a proper diagnosis. Cat. No. 250485, U.S.N.M., contains one specimen from the same locality in an equally poor condition (Coll. No. 1358). Cat. No. 249751, U.S.N.M., another specimen also in poor condition (Coll. No. 1023).

NATICA NEMO, new species.

Plate 13, figs. 6, 9, 12.

Shell subglobose, narrowly umbilicated, moderately elevated, uniformly cream colored. Nuclear whorls two and one-third, moderately well rounded, smooth. Postnuclear whorls well rounded, marked by numerous, very decided notchings, which are strongest near the summit, weakening gradually as they pass over the whorls; on the early whorls they extend to the suture. Suture feebly impressed. Periphery of the last whorl well rounded. Base well rounded, narrowly umbilicated. The periphery and the base are marked by the feeble continuations of the impressed lines. The umbilicus is almost closed by a strong, spiral callus, which occupies the middle of the umbilical wall. The callus on the parietal wall is interrupted at the posterior termination of the spiral umbilical callus where a deep notch is present; outer lip thin at the edge, colored very light brown within.

The type has three postnuclear whorls, and the whole shell measures: Length, 14.2 mm.; diameter, 13.8 mm. It comes from Port Alfred, and is Cat. No. 187083, U.S.N.M. (Coll. No. 625).

NATICA SALDONTIANA, new species.

Plate 13, figs. 1, 2, 3.

Shell small, subglobose, with well-elevated spire. Early whorls badly eroded in our specimens, those remaining, well rounded, marked with strong, retractive lines of growth, which are strongest near the summit, weakening somewhat as they pass over the body of the whorls. Periphery and base of the last whorl well rounded, the latter very narrowly umbilicated. Aperture oval, bluish white within; outer lip thin; inner lip thin, strongly curved and very slightly reflected; parietal wall covered with a thick callus, which extends down to the inner lip and practically covers up the umbilicus, forming a rounded patch over it. The general coloration of the shell is bluish gray, with numerous fine, brown, wavy lines, which coincide in a general way with the lines of growth. There is a tendency on the part of these lines to become consolidated into brown spots at the summit, particularly on the last portion of the last whorl.

The type and another specimen, Cat. No. 163024, U.S.N.M., were dredged in 27 fathoms in Saldontia Bay. The type has four and one half whorls and measures: Length, 14.2 mm.; diameter, 13.6 mm. This shell comes nearest to *Natica nemo* Bartsch, but has a more elevated spire and has the parietal callus extending down over the umbilicus; it also lacks the strongly impressed notchings at the summit.

NATICA, species?

Cat. No. 187081, U.S.N.M., contains three specimens from Port Alfred (Coll. No. 623), which appear to belong to a new species. The color markings of these shells are so badly faded that we refrain from describing the specimens. Cat. No. 249749, U.S.N.M., two equally poor specimens from Port Alfred (Coll. No. 1021).

Cat. No. 250484, U.S.N.M., contains a large, low, broad *Natica*, with a dark umbilical callus, which is too poor to be identified, from Port Alfred (Coll. No. 1357).

Cat. No. 249773, U.S.N.M., contains three nepionic shells of a *Natica*, from Port Alfred (Coll. No. 1045).

Family VANIKOROIDAE.

Genus VANIKORO Quoy and Gaimard.

VANIKORO AFRICANA, new species.

Plate 36, fig. 11.

Shell small, translucent, bluish white. Nuclear whorls one and a half, well rounded, smooth. Postnuclear turns one and a half, well rounded, ornamented with many decidedly retractive axial riblets which are stronger and more distantly spaced on the first turn than

on the succeeding. These riblets are about one-third as wide as the spaces that separate them on the first turn, while on the last turn the intercostal spaces are only a trifle wider than the riblets. The spaces between the riblets are crossed by numerous, very fine spiral striations. Base gradually, deeply umbilicated. The umbilicus marked at its outer edge by a strong carina. The entire surface of the base is marked by the continuation of the axial riblets, which pass undiminished over the base, into the umbilicus. The base appears slightly excavated immediately posterior to this carina. The exterior umbilical wall is concave and marked by the continuation of the axial riblets from aperture; outer lip thickened at the edge; inner lip sinuous, slightly reflected, and continuing over the parietal wall, rendering the peritreme complete.

The type, Cat. No. 249769, U.S.N.M., comes from Port Alfred (Coll. No. 1041). It measures: Altitude, 3 mm. The greatest measurement obtainable while lying on the aperture is 3 mm. Another specimen, Cat. No. 250534, U.S.N.M. (Coll. No. 1407), comes from the same place.

Family ACMAEIDAE.

Genus ACMAEA Eschscholtz.

ACMAEA ROSEORADIATA Smith.

Cat. No. 19319, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 187133, U.S.N.M., two specimens from Port Alfred (Coll. No. 679). Cat. No. 250573, U.S.N.M., contains another specimen from the same locality (Coll. No. 1446).

Family PATELLIDAE.

Genus PATELLA Linnaeus.

PATELLA GRANATINA Linnaeus.

The United States National Museum contains eight lots of this species from the Cape of Good Hope, as follows: Cat. No. 7586, four specimens collected by William Stimpson on the North Pacific Exploring Expedition; Cat. No. 7587, ten specimens; Cat. No. 16615, two specimens; Cat. No. 17347, two specimens; Cat. No. 89797, three specimens; Cat. No. 89798, one specimen; Cat. No. 103886, four specimens; Cat. No. 128388, two specimens. Cat. No. 184355, U.S.N.M., one specimen from Cape Town. Cat. No. 186902, U.S.N.M., one specimen from Port Alfred (Coll. No. 272).

PATELLA LONGICOSTA Lamarck.

Cat. No. 109, U.S.N.M., two specimens collected by William Stimpson on the North Pacific Exploring Expedition at the Cape of Good Hope. Cat. No. 89835, U.S.N.M., two specimens from the Cape of Good Hope. Cat. No. 186901, U.S.N.M., three specimens from Port

Alfred (Coll. No. 271). Cat. No. 249785, U.S.N.M., three specimens from the same locality (Coll. No. 1057).

PATELLA OCLUS Reeve.

Three lots of this species were collected by William Stimpson on the North Pacific Exploring Expedition. Two of these, Cat. No. 94, U.S.N.M., two specimens, and Cat. No. 609, U.S.N.M., six specimens, came from Simons Bay, Cape of Good Hope. Cat. No. 7584, U.S.N.M., five specimens were collected at Cape of Good Hope. Three additional lots from the Cape of Good Hope are in the collection of the United States National Museum: Cat. No. 17346, two specimens; Cat. No. 89796, two specimens; Cat. No. 120280, one specimen. Cat. No. 22747, U.S.N.M., contains one specimen from Algoa Bay. Cat. No. 125381, U.S.N.M., contains two specimens from Cape Town. Cat. No. 187129, U.S.N.M., one specimen from Port Alfred (Coll. No. 675).

PATELLA GRANULARIS Linnaeus.

Cat. No. 194, U.S.N.M., two specimens collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. Cat. No. 16616, U.S.N.M., five specimens from the Cape of Good Hope. Cat. No. 89836, U.S.N.M., two specimens from the Cape of Good Hope. Cat. No. 125396, U.S.N.M., five specimens from Cape Town. Four additional lots are in the collection of the United States National Museum, from Port Alfred: Cat. No. 186898, three specimens (Coll. No. 268); Cat. No. 249899, two specimens (Coll. No. 1171); Cat. No. 250565, two specimens (Coll. No. 1438); Cat. No. 250567, one specimen (Coll. No. 1440). Cat. No. 253738, U.S.N.M., three specimens from Algoa Bay.

PATELLA BARBARA Linnaeus.

The United States National Museum contains eight lots from the Cape of Good Hope, as follows: Cat. No. 16614, four specimens; Cat. No. 32002, two specimens; Cat. No. 32015, three specimens; Cat. No. 89837, one specimen; Cat. No. 89838, one specimen; Cat. No. 128382, one specimen. Cat. No. 125375, U.S.N.M., contains five specimens from Cape Town. Cat. No. 98055, U.S.N.M., four specimens from Albany. In addition to these the United States National Museum contains 11 lots from Port Alfred, as follows: Cat. No. 186896, one specimen (Coll. No. 266); Cat. No. 186900, three specimens (Coll. No. 270); Cat. No. 187128, two specimens (Coll. No. 674); Cat. No. 187130, seven specimens (Coll. No. 676); Cat. No. 187132, two specimens (Coll. No. 678); Cat. No. 227793, four specimens (Coll. No. 888); Cat. No. 227794, four specimens (Coll. No. 889); Cat. No. 249897, one specimen (Coll. No. 1169); Cat. No. 249898, two specimens (Coll. No. 1170); Cat. No. 250564, one specimen (Coll. No. 1437); Cat. No. 250562, five young specimens (Coll. No. 1435).

PATELLA CONSPICUA Philippi.

Cat. No. 17345, U.S.N.M., four specimens from the Cape of Good Hope. Cat. No. 36643, U.S.N.M., two specimens from South Africa without specific locality. Cat. No. 249896, U.S.N.M., contains a specimen from Port Alfred (Coll. No. 1168).

PATELLA ARGENVILLEI Krauss.

Cat. No. 125367, U.S.N.M., three specimens collected by the United States Eclipse Expedition at Cape Town. Cat. No. 186899, U.S.N.M., two specimens from Port Alfred (Coll. No. 269). Cat. No. 227795, U.S.N.M., four young specimens of this species from the same locality (Coll. No. 890).

PATELLA VARIABILIS Krauss.

Cat. No. 17351, U.S.N.M., one specimen from the Cape of Good Hope. In addition to this, the United States National Museum contains four lots from Port Alfred, as follows: Cat. No. 186895, two specimens (Coll. No. 265); Cat. No. 187130 α , one specimen (Coll. No. 676 α); Cat. No. 227788, four specimens (Coll. No. 883); Cat. No. 227789, four specimens (Coll. No. 884). In addition to these, we have seen two lots in Colonel Turton's collection, 20 specimens, Coll. No. 1609, and ten specimens, Coll. No. 1610.

PATELLA COMPRESSA Lamarck.

Cat. No. 17349, U.S.N.M., three specimens from the Cape of Good Hope. Cat. No. 36646, U.S.N.M., three specimens collected by William Stimpson on the North Pacific Exploring Expedition, at the Cape of Good Hope. Cat. No. 128374, U.S.N.M., four specimens from the Cape of Good Hope. Cat. No. 249784, U.S.N.M., contains three young specimens from Port Alfred (Coll. No. 1056).

PATELLA MINIATA Born.

Cat. No. 32014, U.S.N.M., five specimens from the Cape of Good Hope. Cat. No. 90620, U.S.N.M., two specimens from the same place. Cat. No. 128380, U.S.N.M., two specimens from the same locality. In addition to these, the United States National Museum contains four lots from Port Alfred; Cat. No. 186897, four specimens (Coll. No. 267); Cat. No. 227790, six specimens (Coll. No. 885); Cat. No. 227791, six specimens (Coll. No. 886); Cat. No. 249783, two specimens (Coll. No. 1055). Cat. No. 253740, U.S.N.M., are specimens from Tafalbi, South Africa.

PATELLA COCHLEAR Born.

Cat. No. 17344, U.S.N.M., six specimens from the Cape of Good Hope. Cat. No. 90621, U.S.N.M., one specimen from the same place. In addition to these, the United States National Museum contains four lots from Port Alfred, as follows: Cat. No. 186903, one specimen

(Coll. No. 273); Cat. No. 249900, two specimens (Coll. No. 1172); Cat. No. 249901, two specimens (Coll. No. 1173); Cat. No. 249902, two specimens (Coll. No. 1174).

PATELLA CAPENSIS Dunker.

Cat. No. 32000, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 89839, U.S.N.M., three specimens from the same place. In addition to these, the United States National Museum has three lots from Port Alfred, as follows: Cat. No. 249782, one specimen (Coll. No. 1054); Cat. No. 250563, one specimen (Coll. No. 1436); Cat. No. 250568, another specimen (Coll. No. 1441).

PATELLA DUNKERI Krauss.

Cat. No. 105b, U.S.N.M., four specimens collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay, Cape of Good Hope. Cat. No. 125374, U.S.N.M., one specimen from Cape Town. Cat. No. 186895a, U.S.N.M., one specimen from Port Alfred (Coll. No. 265a). Cat. No. 227792, U.S.N.M., two specimens from the same locality (Coll. No. 887).

PATELLA PRUINOSA Krauss.

Cat. No. 14, U.S.N.M., one specimen collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay, Cape of Good Hope. Cat. No. 17352, U.S.N.M., two specimens from the Cape of Good Hope. Cat. No. 186904, U.S.N.M., three specimens from Port Alfred (Coll. No. 274). Cat. No. 250566, U.S.N.M., contains a young specimen of this species (Coll. No. 1439).

Genus *HELICION* Montfort.

HELICION PECTINATUS Linnaeus.

Cat. No. 188, U.S.N.M., six specimens collected by William Stimpson on the North Pacific Exploring Expedition at False Bay, Cape of Good Hope. Cat. No. 18790, U.S.N.M., one specimen from Port Elizabeth. Cat. No. 21823, U.S.N.M., one specimen from Algoa Bay. In addition to these, the United States National Museum contains five lots from the Cape of Good Hope, as follows: Cat. No. 32008, one specimen; Cat. No. 89843, three specimens; Cat. No. 89844, one specimen; Cat. No. 120239, one specimen; Cat. No. 128378, one specimen. Cat. No. 186905, U.S.N.M., one specimen from Port Alfred (Coll. No. 275).

Family PHASIANELLIDAE.

Genus *PHASIANELLA* Lamarck.

PHASIANELLA KOCHII Philippi.

Cat. No. 18793, U.S.N.M., twelve specimens from Port Elizabeth. Cat. No. 43122, U.S.N.M., twenty-six specimens from Cape of Good

Hope. Cat. No. 97997, U.S.N.M., seven specimens from Knysna, South Africa. Cat. No. 98015, U.S.N.M., thirty-seven specimens from Kleinemonnd, South Africa. Cat. No. 186868, U.S.N.M., four specimens from Port Alfred (Coll. No. 238). Cat. No. 187093, U.S.N.M., three specimens from the same locality (Coll. No. 637). Cat. No. 250505, U.S.N.M., seventeen specimens from the same place (Coll. No. 1378). Cat. No. 272128, U.S.N.M., two specimens from South Africa. Cat. No. 272944, U.S.N.M., three specimens from Port Natal.

PHASIANELLA ELONGATA Krauss.

Cat. No. 186867, U.S.N.M., five specimens from Port Alfred (Coll. No. 237). Cat. No. 187094, U.S.N.M., one specimen from the same locality (Coll. No. 638).

PHASIANELLA CAPENSIS Dunker.

Cat. No. 169, U.S.N.M., two specimens collected by William Stimpson on the North Pacific Exploring Expedition, at Simons Bay, Cape of Good Hope. Cat. No. 43122a, U.S.N.M., six specimens from the Cape of Good Hope. Cat. No. 89237, U.S.N.M., eight specimens from the Cape of Good Hope.

PHASIANELLA AFRICANA, new species.

Plate 10, fig. 2.

Shell small, very elongate-conic; ground color yellowish, upon which are superimposed numerous irregular blotches and flammulations of varying shades of brown, which usually are preceded by a white patch. Frequently there is a row of distantly spaced, light blue dots near the suture. Nuclear whorls two, well rounded, forming a depressed, flattened apex. Postnuclear whorls well rounded, appressed at the summit, and marked by exceedingly fine lines of growth only. Periphery of last whorl rounded. Base rather short, well rounded. Aperture almost circular; outer lip thin, showing the exterior markings within; inner lip well curved and slightly reflected over the base; parietal wall covered with a thin callus.

The type and two specimens, Cat. No. 186870, U.S.N.M., come from Port Alfred (Coll. No. 240). The type has three and one-half post nuclear whorls and measures: Length, 3.5 mm.; diameter, 2.7 mm.

Related to *Phasianella capensis*, but at once distinguished from it by its minute size.

Three additional lots from Port Alfred are in the collection of the United States National Museum, Cat. No. 250506, three specimens (Coll. No. 1379); Cat. No. 250507, one specimen (Coll. No. 1380); Cat. No. 249774, three specimens (Coll. No. 1046).

PHASIANELLA BICARINATA Dunker.

Cat. No. 186869, U.S.N.M., three specimens from Port Alfred (Coll. No. 239).

PHASIANELLA NERITINA Dunker.

Cat. No. 19034, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 31693, U.S.N.M., one specimen from the same locality. Cat. No. 125382, U.S.N.M., three specimens from Cape Town.

Family TURBINIDAE.

Genus TURBO Linnaeus.

TURBO SAROMATICUS Linnaeus.

Cat. No. 96, U.S.N.M., eight specimens collected by William Stimpson under and above stones, at Simons Bay, Cape of Good Hope, on the North Pacific Exploring Expedition. Cat. No. 101, U.S.N.M., one specimen, obtained at the same place by the same collector. Cat. No. 18357, U.S.N.M., four specimens collected at the Cape of Good Hope by the Exploring Expedition. Cat. No. 89946, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 98010, U.S.N.M., seven specimens from Kasouga, South Africa. Cat. No. 186864, U.S.N.M., one specimen from Port Alfred (Coll. No. 234).

TURBO CIDARIS Gmelin.

Cat. No. 251, U.S.N.M., one specimen collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay, Cape of Good Hope. Cat. No. 18792, U.S.N.M., one specimen from Port Elizabeth.

Cat. No. 250495a, U.S.N.M., one specimen from Port Alfred (Coll. No. 1368).

TURBO NATALENSIS Krauss.

Cat. No. 98007, U.S.N.M., five specimens from the Peddie Coast, South Africa. Cat. No. 186863, U.S.N.M., one specimen from Port Alfred (Coll. No. 233).

Cat. No. 250495, U.S.N.M., two specimens from the same locality (Coll. No. 1368).

TURBO CORONATUS Gmelin.

Cat. No. 98006, U.S.N.M., four specimens from Kaffraria, South Africa.

Genus ASTRAEA Bolten.

ASTRAEA TAYLORIANA Smith.

Cat. No. 186862, U.S.N.M., one specimen from Port Alfred (Coll. No. 232).

Genus LEPTOTHYRA Dall.

LEPTOTHYRA SPURIA Gould.

Plate 22, figs. 4, 5, 6.

Monilea spuria GOULD, Proc. Bost. Soc. Nat. Hist., vol. 7, p. 17, 1861.

Shell broadly depressed, conic, yellowish-white. Nuclear whorls two, the first smooth, the second marked by many fine raised axial

threads which are about as wide as the spaces that separate them. Postnuclear whorls marked by four, strong, broad, rounded, spiral cords of which the first is at the summit, while the second is a little nearer the first than it is to the third, the fourth, marking the periphery, is about as far from the third as that is from the second. On the last turn two additional slender spiral threads make their appearance, one immediately anterior to the second, the other, anterior to the third heavy spiral cord. The cords are marked quite regularly by weak tubercles which are about as long as they are broad and are separated from each other by a space about two-thirds as wide as a tubercle. Sutures deeply channelled. Periphery of the last whorl well rounded. Base short, well rounded, marked by seven strong rounded spiral cords which increase in size from the periphery to the columellar chink. The spaces separating the cords are deep sulci narrower than the cords. The entire surface is marked by closely spaced, very slender, wavy, axial threads. Aperture very oblique, small, outer lip bending strongly anteriorly to join the columella, thin at the edge, where it is rendered wavy by the sculpture, but very thick a little behind the edge; columella short, decidedly revolute; parietal wall covered with a thick callus which completes the peristome.

Cat. No. 24269, U.S.N.M., contains Gould's cotypes, three specimens collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay, Cape of Good Hope. We have figured the largest of these, which has two and one-fourth postnuclear whorls, and measures: Altitude, 5.5 mm.; greater diameter, 6.5 mm.; lesser diameter, 6.0 mm.

LEPTOTHYRA AFRICANA, new species.

Plate 22, figs. 1, 2, 3.

Shell with moderately elevated spire. Nuclear whorls white, the rest marked with irregular axial bands of white and reddish brown. Nuclear whorls two, apparently smooth. Postnuclear whorls marked with three strong spiral cords between the sutures; the first of which is a little below the summit, while the third is a little posterior to the periphery, the second being midway between them. The sulci between the cords are almost two times as wide as the cords. On the last whorl an additional cord appears between the first and second and second and third. In each case this anterior cord is greater than the primary ones and a little nearer to the one posterior than to its anterior neighbor. In addition to the spiral sculpture, the whorls are marked by numerous, fine, retractive, axial threads. Sutures strongly impressed. Periphery of the last whorl marked by a strong spiral cord. Base short, well rounded, marked with four strong, spiral cords which equal the peripheral one in strength and a tumid

area which extends over the anterior third of the base. The sulci separating the cords on the base are about as wide as the cords. The sulcus immediately anterior to the peripheral cord carries a slender thread equal to the posterior cord on the spire. Aperture sub-circular; outer lip thick within, thinning to the somewhat sinuous edge; inner lip very strongly curved and slightly reflected over the base; parietal wall covered with a thick callus. In addition to the spiral sculpture the base is marked by the continuation of the fine axial threads.

Young specimens are very broadly umbilicated. In the adult, however, the last whorl bends in and completely covers the umbilicus. The type and three specimens of this species, Cat. No. 186866, U.S.N.M., come from Port Alfred (Coll. No. 236). The type, an adult specimen, having two and one-fourth postnuclear whorls, measures: Altitude, 5.2 mm.; greater diameter, 7.2 mm.

LEPTOTHYRA QUANTILLA Gould.

Plate 23, figs. 4, 5, 6.

Collonia quantilla GOULD, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 22, 1861.

Shell small, apex wax yellow, the rest bright red, excepting the umbilical area of the base, which is white. Nuclear whorls well rounded, smooth. Postnuclear whorls marked by strong, rounded, spiral cords which are a little wider than the spaces that separate them; of these cords four occur upon the first and second; five upon the third, and six upon the last turn. The axial sculpture of the spire consists of fine incremental lines only. Sutures channelled. Periphery of the last whorl well rounded. Base short, well rounded, narrowly, openly umbilicated, marked by 15 low, well rounded, spiral cords which are about twice as broad as the spaces that separate them, and fine incremental lines. Aperture very oblique, subcircular; outer lip thin at the edge but very much thickened immediately behind this; columella very thick and strongly curved; parietal wall covered with a thick callus.

Cat. No. 135, U.S.N.M., Gould's type, was collected by William Stimpson on the North Pacific Exploring Expedition at Simon's Bay, Cape of Good Hope. It has almost three postnuclear whorls and measures: Altitude, 2 mm.; greater diameter, 2.8 mm.; lesser diameter, 2.3 mm. Two additional lots from Port Alfred are in the collection of the U.S.N.M., Cat. No. 186865a, one specimen (Coll. No. 235a) and Cat. No. 249770 (Coll. No. 1042).

LEPTOTHYRA CARMINEA, new species.

Plate 23, figs. 7, 8, 9.

Shell small, bright carmine red except the nuclear whorls, which are white. Nuclear whorls two and one-fourth, smooth, separated

by a scarcely perceptible suture, forming a depressed apex. Post-nuclear whorls well rounded, the first ornamented with three spiral cords which are about one-third as wide as the spaces that separate them and which divide the spaces between the sutures into four equal portions. On the last turn the spiral cords have increased to six which are equal and almost equally spaced. In addition to the spiral sculpture, the whorls are marked by numerous, feeble, decidedly retractive lines of growth. Sutures strongly impressed. Periphery of the last whorl well rounded. Base short, well rounded, narrowly umbilicated, marked by six spiral cords which equal those on the spire in strength with the exception of the anterior one which is much weaker than the rest. Aperture oval; outer lip very thick showing the exterior marking within by transparent light. Inner lip exceedingly thick, decidedly curved, partly reflected over and appressed to the base.

The type and another specimen of this species Cat. No. 186865, U.S.N.M., come from Port Alfred (Coll. No. 235). The type has two postnuclear whorls, and measures: Altitude, 2.4 mm.; greater diameter, 3.3 mm.

This species recalls *Leptothyra sanguinea* Linnaeus, and may be what has been reported from South Africa under this name. It differs from *sanguinea* by having the nuclear whorls white and in being umbilicated in the adult stage, also in detail of sculpture, but most conspicuously by its minute size. Cat. No. 272266, U.S.N.M., contains eight specimens from Algoa Bay.

LEPTOTHYRA ALFREDENSIS, new species.

Plate 32, figs. 1, 2, 3.

Shell creamy yellow. The sculpture of the nuclear whorls is worn too badly to be determined. That of the first postnuclear turn consists of a very slender thread at the appressed summit, and three strong spiral keels, of which one is at the periphery, another about one-third of the distance between the summit and the suture, anterior to the summit, while the median one is a little nearer to the peripheral keel than the one below the summit. In addition to these strong spiral cords, the whorls are marked by fine, raised, spiral threads, of which eight occur on the concave shoulder between the summit and the strong keel below it, and five between the first keel and the median, and three between the median and the peripheral. In the latter case the middle one is fully twice as strong as the two slender threads bordering it. The base of the last whorl is marked by three strong spiral keels which divide the space between the peripheral keel and the umbilical region into four equal broad grooves, which are also marked with fine spiral threads, two occurring on the first and second below the periphery, and five between the second and

last. The open umbilicus is likewise marked with slender spiral threads. In addition to the spiral sculpture, the entire surface of the shell is marked by numerous, retractorily slanting, slender, raised, axial threads, which are almost lamellar and are about one-fourth as wide as the spaces that separate them; of these, about 65 occur on the last turn. These threads run up on the sides of the strong spiral keels, and may pass over them; in our specimen the keels are too worn to determine this point. The axial sculpture is equally strong on the spire and the base and even bends into the umbilicus. Aperture very oblique, subcircular; outer lip rendered angulated by the spiral cords; inner lip strongly curved and slightly reflected.

The type, Cat. No. 250500, U.S.N.M., comes from Port Alfred (Coll. No. 1373). It has four whorls, and measures: Altitude, 4.7 mm.; greater diameter, 4.8 mm.

Family TROCHIDAE.

Genus CLANCULUS Montfort.

CLANCULUS MINIATUS Anton.

Cat. No. 134, U.S.N.M., contains one specimen collected by William Stimpson on the North Pacific Exploring Expedition, at Simons Bay, Cape of Good Hope. Cat. No. 18753, U.S.N.M., five specimens from Cape of Good Hope. Cat. No. 43096, U.S.N.M., four specimens from the Cape of Good Hope. Cat. No. 186871, U.S.N.M., eight specimens from Port Alfred (Coll. No. 241). Cat. No. 187104, U.S.N.M., one specimen from the same locality (Coll. No. 649).

CLANCULUS ALFREDENSIS, new species.

Plate 23, figs. 10, 11, 12.

Shell broadly conic, rose colored, obscurely clouded with brown. The first turn of the nucleus is strongly rounded and smooth, the next is marked by three strong, spiral keels which divide the spaces between the sutures into four equal parts. On the next whorl a fourth keel makes its appearance between the summit and the first keel anterior to it. On this whorl, the lines of growth assume the form of slender threads. The post-nuclear whorls are marked by two strong angles, one of which is at the periphery and the other half-way between this and the summit. Each of these angles bears a strong tuberculated cord. Between the median angle and the summit of the whorls two tuberculated spiral cords occur upon the first turn, three on the second, and four upon the last, the cord at the summit having the strongest tubercles in each instance. Between the peripheral cord and the median there is a faint thread upon the first whorl, three nodulous cords on the second, of which the median is the strongest, and five on the last. All of these cords are

tuberculated. In addition to the above sculpture, the entire surface of the post-nuclear whorls is marked by very many, narrow, lamellar, axial threads, which pass over the grooves between the spiral cords and also the tubercles of the ridges. Sutures moderately impressed. Periphery rendered feebly angulated by a spiral cord. Base short, deeply and broadly umbilicated, marked with eight equal and equally spaced, strong, nodulous spiral cords and an equal number of weak nodulous spiral threads which occur half-way between the strong cords. One of these slender threads also occurs between the strong peripheral cord and the first basal. In addition to the above, the entire surface is marked by the continuations of the slender lamellar riblets. No ribs are apparent within the umbilicus. Aperture rhomboidal; outer lip rendered sinuous by the external sculpture, which is also true of the basal lip; inner lip oblique, straight; parietal wall not covered with a callus.

The type, Cat. No. 186871a, U.S.N.M., comes from Port Alfred (Coll. No. 241a). The type has a little more than two and one-half post-nuclear whorls, and measures: Altitude, 7.2 mm.; greater diameter, 8.7 mm.

CLANCULUS WALTONAE Sowerby.

Cat. No. 187105, U.S.N.M., one specimen from Port Alfred (Coll. No. 650). Cat. No. 227779, U.S.N.M., one specimen from the same locality (Coll. No. 874).

CLANCULUS MERULOIDES Krauss.

Cat. No. 18680, U.S.N.M., one specimen from Cape of Good Hope.

Genus OXYSTELE Philippi.

OXYSTELE MERULA Lamarch.

Cat. No. 104, U.S.N.M., three specimens collected by William Stimpson on the North Pacific Exploring Expedition at the Cape of Good Hope. Cat. No. 36801, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 90152, U.S.N.M., two specimens from the same locality. Cat. No. 98008, U.S.N.M., three specimens from the Peddie coast, South Africa. Cat. No. 186881, U.S.N.M., three specimens from Port Alfred (Coll. No. 251).

OXYSTELE TIGRINA Anton.

Cat. No. 98, U.S.N.M., two specimens collected by William Stimpson on the North Pacific Exploring Expedition at the Cape of Good Hope. Cat. No. 104a, U.S.N.M., six specimens collected by the same party at the same place. Cat. No. 98022, U.S.N.M., seven specimens from Peddie and Albany, South Africa. Cat. No. 186880, U.S.N.M., three specimens from Port Alfred (Coll. No. 250).

Cat. No. 250491, U.S.N.M., three young specimens from the same locality (Coll. No. 1364).

OXYSTELE SAGITTIFERA Lamarck.

The young of this species are exceedingly interesting and might lead one to consider them a *Gibbula*. I append a description.

Shell very small, remarkably colored; lines of connected dots of red radiate from the summit of the turns, curving decidedly protractively down to the periphery. These are separated by bands of pale blue which are about as wide as the red bands. In some specimens the blue is replaced by olive. The under side is dotted with the same reddish brown spots at irregular intervals upon a light-olive ground. Nuclear whorls one and one-half, well rounded, smooth. Post-nuclear turns well rounded, slightly impressed at the summit to render the suture weakly channeled; marked with fine, depressed, slightly rounded, spiral threads, of which 17 occur between the periphery and the summit on the last turn. These threads are separated by mere incised lines. The rest of the sculpture on the spire consists of very fine lines of growth. Periphery of the last whorl obtusely angulated. Base short, openly umbilicated, marked like the spire with slender, low, rounded threads, of which 12 occur between the edge of the umbilicus and the periphery. The umbilicus appears to be devoid of spiral sculpture, being marked only by the little coarser lines of growth. Aperture very large; outer lip thin; inner lip curved and slightly reflected.

The specimen described has three post-nuclear whorls, and measures: Altitude, 1.8 mm.; greater diameter, 2.5 mm.

Cat. No. 96, U.S.N.M., one specimen collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay, Cape of Good Hope. Cat. No. 113, U.S.N.M., fourteen specimens collected by the same party at Cape of Good Hope. Cat. No. 89241, U.S.N.M., two specimens from the Cape of Good Hope. Cat. No. 98009a, U.S.N.M., one specimen from Kassouga, South Africa. Cat. No. 98018, U.S.N.M., three specimens from the Peddie coast. Cat. No. 98019, U.S.N.M., seven specimens from the same locality. Cat. No. 98020, U.S.N.M., three specimens from the same place. Cat. No. 98021, U.S.N.M., three specimens from the Peddie coast. Cat. No. 98259, U.S.N.M., five specimens from the Cape of Good Hope. Cat. No. 125373, U.S.N.M., three specimens from Cape Town. Cat. No. 131106, U.S.N.M., one specimen labeled: "South Africa," without specific locality. Nine lots of this species, all from Port Alfred, are in the collection of the United States National Museum: Cat. No. 186873, four specimens (Coll. No. 248); Cat. No. 187107, two specimens (Coll. No. 652); Cat. No. 187108, one specimen (Coll. No. 653); Cat. No. 187113, one young specimen (Coll. No. 659); Cat. No. 249772, three young specimens (Coll. No. 1044); Cat. No. 250488, eight specimens (Coll. No. 1361); Cat. No. 250489, four

specimens (Coll. No. 1362); Cat. No. 250490, four specimens (Coll. No. 1363); Cat. No. 250492, four young specimens (Coll. No. 1365); Cat. No. 250493, one specimen (Coll. No. 1366); Cat. No. 250494, one specimen (Coll. No. 1367); Cat. No. 250496, four young specimens (Coll. No. 1369).

OXYSTELE TABULARIS Krauss.

Cat. No. 113a, U.S.N.M., one specimen collected by William Stimpson on the North Pacific Exploring Expedition at the Cape of Good Hope. Cat. No. 31697, U.S.N.M., five specimens from the Cape of Good Hope. Cat. No. 98009, U.S.N.M., five specimens from Kassaouga, South Africa. Cat. No. 186879, U.S.N.M., three specimens from Port Alfred (Coll. No. 249).

Genus UMBONIUM Link.

UMBONIUM VESTIARIUM Linnaeus.

Cat. No. 59857, U.S.N.M., contains twelve specimens from the Cape of Good Hope.

Genus GIBBULA Risso.

GIBBULA LOCULOSA Gould.

Plate 23, figs. 1, 2, 3.

Gibbula loculosa GOULD, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 21, 1861.

Shell helicoid, light brown, with three large white spots between the suture and the periphery of each whorl, dividing the whorl into equal areas. There are also small spots darker than the general coloration which are especially apparent on the strong spiral cords which they divide into equal alternating light and dark areas. These small markings give the base a checker-board appearance. Nuclear whorls small, well rounded, the first smooth, the second provided with four feeble spiral threads. Postnuclear whorls marked by strong sublamellar spiral keels, of which four occur upon the first, and five upon the second. On the next turn an intercalated cord occurs between all the strong keels excepting the space between the third and fourth which has two. On the last turn two cords occur between the first and second keels, one between the second and third, three between the third and fourth and fourth and fifth. In addition to the spiral sculpture the whorls are marked on the spire by numerous closely spaced, decidedly retractorily slanting, thin, lamellar, axial riblets. Suture strongly impressed. Periphery rendered strongly angulated by a spiral keel, between which and the first supraperipheral keel two slender cords are presented. Base well rounded, narrowly umbilicated, marked by a series of more or less regularly alternating strong and less strong spiral cords of which there are twenty-

six in all. Aperture subcircular, outer lip thin, showing the external sculpture within, somewhat wavy at the edge; columella short, stout, strongly curved; parietal wall covered with a thin callus.

There are two cotypes, Cat. No. 221, U.S.N.M., collected by William Stimpson on the North Pacific Exploring Expedition at False Bay, Cape of Good Hope. The larger of them, the specimen figured, has four postnuclear whorls, and measures: Altitude, 7.2 mm.; greater diameter, 8.5 mm.; lesser diameter, 7.5 mm. Cat. No. 101, U.S.N.M., contains one specimen also collected by William Stimpson at the Cape of Good Hope. Cat. No. 90108*b*, U.S.N.M., one specimen from the Cape of Good Hope.

GIBBULA FULGENS Gould.

Plate 26, figs. 4, 5, 6.

Gibbula fulgens GOULD, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 21, 1861.

Shell helicoid with rather elevated spire, light brown with blotches of dark brown and yellowish-white, these usually on and near the spiral cords, a pearly luster shining through the thin epidermis, particularly in the lighter areas. Nuclear whorls two and one-half, well rounded, smooth, white. Postnuclear whorls ornamented by spiral cords of which three strong ones and two slender ones occur between the summit and the periphery on the first two whorls. The first strong cord is at the summit, the second, half way between the first and third, while the third is as far posterior to the suture as the second is removed from the first. The stronger of the two fine cords is half way between the first and second strong cords and the lesser, half way between this and the one at the summit. On the last turn a third slender cord occurs between the first and second strong cords, dividing the space between the medium slender cord and the second strong cord into equal portions; another slender cord divides the space between the second and third strong cords medially. Sutures strongly impressed. Periphery of the last whorl angulated. Base well rounded, narrowly umbilicated, marked by 10 strong spiral cords, which are almost equal and equally spaced, becoming successively only a trifle less strong and more approximated to each other from the periphery toward the umbilicus. Aperture subcircular, very oblique; outer lip thin at the edge, thick within; columella strong, decidedly curved; parietal wall covered with a thin callus.

The type, Cat. No. 2046, U.S.N.M., was collected by William Stimpson on the North Pacific Exploring Expedition at the Cape of Good Hope; it has three and one-fourth postnuclear whorls, and measures: Altitude, 8 mm.; greater diameter, 7.5 mm.; lesser diameter, 7 mm.

GIBBULA ARTICULATA Gould.

Plate 25, figs. 4, 5, 6.

Margarita articulata GOULD, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 15, 1861.

Shell horn colored with spots of brown, which equally divide the space with ground color on the spiral keels. There is a line of comma-shaped spots which extend from the summit into the flat space anterior to it. Nuclear whorls two and one-half, small, well rounded, smooth, white. Postnuclear whorls three and one-third, the first two marked by three strong lamellar spiral keels, the last by four between the summit and the periphery. The keels are equally spaced, the fourth being at the periphery, while the first is a little further from the summit than it is from its neighbor anteriorly. In addition to the spiral sculpture, the whorls are marked by very slender, closely spaced, axial threads which are best developed in the spaces between the spiral cords. Periphery and base well rounded, the latter broadly umbilicated and marked by 10 depressed spiral cords which are truncated posteriorly and slope gently anteriorly, the whole having the appearance of a series of imbricating bands. In addition to these, there are three cords in the umbilicus wider and stronger than those on the base. These cords are crossed by closely spaced riblets which give them a peculiarly notched appearance. Aperture subcircular; outer lip rendered sinuous by the spiral keels; columella slender, strongly curved; parietal wall covered with a thin callus.

Gould's type, Cat. No. 121, U.S.N.M., was collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay, Cape of Good Hope. It has $3\frac{1}{2}$ postnuclear whorls and measures: Altitude, 6 mm.; greater diameter, 7 mm.; lesser diameter, 6 mm. Two additional lots are in the United States National Museum. Cat. No. 90108, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 187106, U.S.N.M., one specimen from Port Alfred (Coll. No. 651).

GIBBULA FUCATA Gould.

Plate 27, figs. 4, 5, 6.

Gibbula fucata GOULD, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 20, 1861.

Shell elevated, helicoid, apex red, the rest variously spotted, streaked and blotched with Indian red, pale yellow, light green and brown. Nuclear whorls two and one-half, well rounded, smooth. Postnuclear whorls marked by four, very strong, rounded, equal, and equally spaced, spiral cords, of which the first is at the summit and the fourth at the periphery. On the last turn the cord at the summit becomes obsolete. In addition to the spiral sculpture the whorls are marked by very retractorily slanting, closely spaced lines of growth. Periphery of the last whorl rendered decidedly angulated by the spiral cord. Base short, well rounded, marked on the posterior fourth

by six, narrow, flattened, spiral bands and between these and the umbilical chink by seven additional bands of about double the width of the former. Umbilicus covered with a white callus. Aperture subcircular, very oblique; outer lip thin at the edge, thick within; columella strong and decidedly curved; parietal wall covered by a moderately thick callus.

Gould's cotypes, Cat. No. 2047, U.S.N.M., two specimens, were collected by William Stimpson on the North Pacific Exploring Expedition at the Cape of Good Hope. The largest of these two specimens has two and one-eighth postnuclear whorls, and measures: Altitude, 5.6 mm.; greater diameter, 7.3 mm.; lesser diameter, 6 mm. Cat. No. 186876, U.S.N.M., contains three specimens from Port Alfred (Coll. No. 246).

GIBBULA CICER Menke.

Plate 30, figs. 8, 9, 10.

Cat. No. 144, U.S.N.M., Gould's cotypes, eleven specimens of *Gibbula musiva*, a synonym of the above species, one of which is figured. Cat. No. 150, U.S.N.M., seven specimens collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. Cat. No. 222, U.S.N.M., three specimens collected by the same at False Bay. Cat. No. 43098, U.S.N.M., eight specimens from the Cape of Good Hope. Cat. No. 43122b, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 98260, U.S.N.M., two specimens from Cape of Good Hope. Cat. No. 186877, U.S.N.M., three specimens from Port Alfred (Coll. No. 247). Cat. No. 250499, U.S.N.M., contains another specimen from the same locality (Coll. No. 1372). Cat. No. 272127, U.S.N.M., an additional specimen from Natal.

GIBBULA GAUDIOSA Gould.

Plate 28, figs. 1, 2, 3.

Gibbula gaudiosa GOULD, Proc. Boet. Soc. Nat. Hist., vol. 5, p. 21, 1861.

Shell helicoid, moderately elevated, red, with four regularly spaced triangular sectors of greenish yellow, on the last turn and one on the whorl preceding this. The cords of the early turns are of the most intense red, equaling the base in the brilliancy of this color. Nuclear whorls, one and one-half, white. Postnuclear whorls well rounded, the first and second marked by four equal, and equally spaced, strong, spiral keels. On the third, a fine, intercalated thread occurs between the strong cords, while on the last turn the number of fine spiral threads between the strong cords is doubled. In addition to the above sculpture, the spire is marked by rather strong, closely spaced, retractive incremental lines. Sutures strongly impressed. Periphery of the last whorl rendered strongly angulated by the fourth strong spiral cord. Base short, well rounded, marked by 15 almost equal and equally spaced, well-rounded, spiral cords. Aper-

ture subcircular, oblique; outer lip thin at the edge where it is rendered sinuous by the strong spiral cords; columella moderately stout, well curved; parietal wall covered with a thin callus.

Gould's cotypes, two specimens, Cat. No. 222a, U.S.N.M., were collected by William Stimpson on the North Pacific Exploring Expedition at False Bay, Cape of Good Hope. The largest of these, the specimen figured, has almost four postnuclear whorls, and measures: Altitude, 5.6 mm.; greater diameter, 5.7 mm.; lesser diameter, 5 mm. Cat. No. 187110, U.S.N.M., one specimen from Port Alfred (Coll. No. 656).

GIBBULA THALIA, new species.

Plate 30, figs. 1, 2, 3.

Shell small, white, flaked with large patches of brown, sprinkled irregularly with blotches of carmine. Nuclear whorls two and one-half, well rounded, smooth. Postnuclear whorls strongly rounded, marked with five strong, equal, spiral keels between the sutures, of which the first is at the summit, while the last forms the peripheral keel. The spaces between the spiral keels are a little wider than the keels. In addition to the spiral sculpture the whorls are marked by very numerous, decidedly retractive, axial threads. Sutures strongly impressed. Base moderately long, well rounded, strongly, openly umbilicated, marked by nine, equal and equally spaced, depressed spiral cords, which are almost double the width of the spaces that separate them. In addition to these spiral cords the base is marked by the continuations of the axial threads. Inside of umbilicus smooth. Aperture subcircular, oblique; outer lip rendered decidedly sinuous at the edge by the external sculpture; inner lip strongly curved and slightly reflected.

The type, Cat. No. 187112, U.S.N.M., comes from Port Alfred (Coll. No. 658). It has three postnuclear whorls, and measures: Altitude, 4.5 mm.; greater diameter, 5.5 mm.

GIBBULA HERA, new species.

Plate 26, figs. 1, 2, 3.

Shell subglobose, very dark brown, mottled and streaked with yellow horn color. Nuclear whorls two and one-half, well rounded, smooth. Postnuclear whorls well rounded, decidedly shouldered at the summit, marked between this and the suture by broad, depressed, spiral cords, of which five occur upon the first, six upon the second, while the last whorl has eight, owing to splitting of the primary cords. The spaces that separate the cords are less than one-half the width of the cords and are very feebly impressed. In addition to the above sculpture the spire is marked with feeble, decidedly retractive lines of growth which pass over the cords and grooves. Periphery of the last whorl subangulated, marked by a slender spiral cord.

Base moderately long, well rounded, and openly, broadly umbilicated, marked by 13 subequal and subequally spaced spiral threads which are wider than the spaces that separate them. In addition to the spiral cords, the base is marked by the continuation of the lines of growth. Inside of umbilicus smooth. Aperture large, subquadrate; outer and basal lips thin, forming a decided angle at their junction; inner lips oblique, smooth, sinuous; parietal wall glazed with a thin callus.

The type and two specimens of the species, Cat. No. 90108a, U.S.N.M., come from the Cape of Good Hope. The type has three and one-fourth postnuclear whorls, and measures: Altitude, 7 mm.; greater diameter, 8 mm.

GIBBULA MULTICOLOR Krauss.

Cat. No. 186874, U.S.N.M., three specimens from Port Alfred (Coll. No. 244). Cat. No. 250508, U.S.N.M., one specimen from Port Alfred (Coll. No. 1381).

GIBBULA BENZI Krauss.

Cat. No. 221a, U.S.N.M., two specimens collected by William Stimpson on the North Pacific Exploring Expedition, at False Bay, Cape of Good Hope. Cat. No. 186875, U.S.N.M., four specimens from Port Alfred (Coll. No. 245). Cat. No. 186876a, U.S.N.M., one specimen from the same locality (Coll. No. 246a).

GIBBULA CAPENSIS Gmelin.

Cat. No. 98261, U.S.N.M., two specimens from the Cape of Good Hope. Cat. No. 253737, U.S.N.M., one specimen from the same locality.

GIBBULA AGLAIA, new species.

Plate 27, figs. 1, 2, 3.

Shell depressed, conic, of yellowish white ground color, profusely spotted and dashed with red. A series of large interrupted blotches form a chain on the shoulder while the spiral cords are marked by equally spaced, comma-shaped markings. On the peripheral cord is another series of regularly spaced blotches, while one of the cords of the base is marked at regular intervals with dots of red. Nuclear whorls two, depressed helicoid. Postnuclear whorls well rounded, appressed at the summit, marked between the sutures by three feebly developed spiral cords which appear truncated posteriorly and slope gently anteriorly to the next cord, giving the whorl the effect of being wrapped by three turns of a bandage. The space between the posterior edge of the first band and the summit is a little wider than the other threespaces, which are equal. Suture moderately impressed. Periphery of the last whorl rendered somewhat angular by the spiral cord. Base broadly, openly umbilicated, marked with six spiral

bands which have the same arrangement as the spiral sculpture on the spire. The umbilicus is without any sculpture. Entire surface of spire and base marked by exceedingly fine lines of growth which are decidedly retractorily slanted on the spire. Aperture subquadrate, decidedly oblique; outer and basal lips forming an obtuse angle at their junction; inner lip thick, decidedly sinuous; parietal wall glazed with a thin callus.

The type, Cat. No. 102730, U.S.N.M., comes from the Cape of Good Hope. It has four postnuclear whorls, and measures: Altitude, 6 mm.; greater diameter, 6.4 mm. Cat. No. 43011a, U.S.N.M., contains one specimen from the Cape of Good Hope.

GIBBULA MEDUSA, new species.

Plate 29, figs. 7, 8, 9.

Shell depressed conic. Nuclear whorls white. Postnuclear whorls marked with broad axial bands of brown which may extend entirely across the whorls, or may be interrupted in the middle. These bands of brown are separated by spaces of a light sage green, which are about as wide as the brown bands on the posterior half of the whorls between the sutures; the green area fading to yellow anteriorly. These light areas are speckled with small dots of chestnut and clouded in places with pale brown. The base is pale green, profusely spotted with dots and blotches of red. Nuclear whorls two and a quarter, depressed helicoid. Postnuclear whorls evenly rounded, marked with two, broad, spiral bands, which extend over the anterior half of the whorls between the sutures, where they appear as two turns of a bandage. The periphery of the last whorl is marked by a moderately strong spiral keel which renders it angulated. Sutures feebly constricted. Base short, well rounded, broadly umbilicated; marked by seven broad low bands which grow successively wider from the umbilical edge toward the periphery. These bands appear as a series of turns of a bandage. Umbilicus without any spiral sculpture. The entire surface of spire and base is marked with faint retractive lines of growth. Aperture very oblique, oval; outer and basal lips thin, showing the external markings within; inner lip quite thick, evenly curved; parietal wall glazed with a very thin callus.

The type and two specimens of this species, Cat. No. 43011, U.S.N.M., come from the Cape of Good Hope. The type has two and one-half postnuclear whorls, and measures: Altitude, 3.5 mm.; greater diameter, 5 mm.

GIBBULA TRYONI Pilsbry.

Cat. No. 186873, U.S.N.M., three specimens from Port Alfred (Coll. No. 243).

GIBBULA PINTADO Gould.

Plate 28, figs. 10, 11, 12.

Margarita pintado GOULD, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 16, 1861.

Shell helicoid, moderately elevated, wax yellow ground color, marked with elongate brown spots on the spiral keels, which are equal to the intervening light areas that separate them in length. Color pattern of base similar to that of the spire. Nuclear whorls one and one-half, well rounded, smooth. Postnuclear whorls strongly rounded, marked by seven well rounded, equally developed and equally spaced, spiral cords on all the turns between the summit and the periphery. Suture feebly impressed. Periphery of the last whorl well rounded. Base moderately long, well rounded and narrowly umbilicated, marked by 15 almost equal and equally spaced spiral cords; in the spaces between several of these a fine, spiral line is apparent. Umbilicus without spiral sculpture. The entire surface is marked with very slender, decidedly, retractorily, slanting, regularly spaced axial threads. Aperture oblique, subquadrate; outer lip thin, rendered wavy on the edge by the external sculpture; columella stout, very oblique, almost straight; parietal wall covered with a thin callus.

Gould's type, Cat. No. 213, U.S.N.M., was dredged by William Stimpson on North Pacific Exploring Expedition, in 12 fathoms, on sand bottom, in Simons Bay, Cape of Good Hope. It has $3\frac{1}{2}$ post-nuclear whorls, and measures: Altitude, 4.5 mm.; greater diameter, 5.6 mm.; lesser diameter, 5.1 mm.

GIBBULA ZONATA Wood.

Cat. No. 123, U.S.N.M., three specimens collected by William Stimpson on the North Pacific Exploring Expedition in Simons Bay, Cape of Good Hope. Cat. No. 18697, U.S.N.M., three specimens from the Cape of Good Hope. Cat. No. 42887, U.S.N.M., six specimens from the same place. Cat. No. 90127, U.S.N.M., seven specimens from the same locality. Cat. No. 250497, U.S.N.M., two young specimens from Port Alfred (Coll. No. 1370). Cat. No. 250528, two young specimens from the same locality (Coll. No. 1401). Cat. No. 272126, U.S.N.M., two from the Cape of Good Hope.

GIBBULA RIFACA, new species.

Plate 32, figs. 4, 5, 6.

Shell subenticular, wax colored, with irregular blotchings and spottings of very pale chestnut brown; upper surface depressed, helicoid. The nucleus consists of a little more than one whorl, which is well rounded and smooth. Postnuclear turns marked by strongly incised spiral lines, causing the space between them to appear as raised, well

rounded spiral cords on the first two postnuclear whorls and as broad flattened cords on the last turn. Eight of these spiral cords appear on the first, seven on the second, while on the last turn 12, including the peripheral cord, appear between the periphery and the summit, those nearest the periphery on this whorl being much narrower than on the posterior portion of the whorl. Sutures well marked. Periphery of the last whorl very strongly angulated. Base very short, slightly concave, broadly, openly umbilicated, marked by 12 depressed, rounded spiral cords of somewhat varying width. The entire surface of the shell is marked by slender lines of growth which extend over the base and into the umbilicus. Aperture very oblique, large; outer lip thin, showing the external sculpture within; inner lip almost vertical, sinuous, reflected over and appressed to the preceding whorl.

The type and another specimen, Cat. No. 187111, U.S.N.M., come from Port Alfred (Coll. No. 657). The type has three and one-half postnuclear whorls, and measures: Altitude, 3.5 mm.; greater diameter, 5 mm.

Genus *SOLARIELLA* Wood.

SOLARIELLA FUSCOMACULATA Smith.

Cat. No. 187099, U.S.N.M., two specimens from Port Alfred (Coll. No. 643).

SOLARIELLA, species ?

Cat. No. 187100, U.S.N.M., contains three specimens from Port Alfred (Coll. No. 644), which belong to this genus, but which are too worn to be properly identified. Cat. No. 250525, U.S.N.M., contains two additional specimens of this species, but also too worn to serve for diagnosis (Coll. No. 1398), from Port Alfred.

Genus *CALLIOSTOMA* Swainson.

CALLIOSTOMA EUCOSMIA, new species.

Plate 25, figs. 1, 2, 3.

Shell broadly conic, of wax ground-color, variously mottled and clouded with patches of white and brown; on the spire there is also a narrow purple band which extends over the periphery and a little posterior to it on the early whorls. On the base, particularly on the area adjacent to the umbilical region, brown flakes alternating with flakes of white, form a chain-like pattern. Nuclear whorls about one and one-half, well rounded, smooth. Postnuclear whorls moderately rounded, marked with subequal, and subequally spaced, granulose, spiral cords, of which 4 occur upon the first, 5 upon the second, 7 upon the third, 12 upon the fourth, and 23 upon the last whorl between the sutures. These cords are about as wide as the spaces that separate them. The tubercles on them are elongated, their long axes coincid-

and broadest of these being at the summit, the next in strength being a median, while the third is a little less strong and is a little posterior to the periphery. On the second turn the first cord splits, the two elements becoming equal in strength eventually. The spaces which separate the cords are strongly impressed spiral grooves. The axial sculpture consists of rather broad, low ribs, the intersection of which with the spiral sculpture form well marked tubercles. In the broad spiral grooves which separate the spiral cords there appear numerous fine axial threads. Sutures strongly channeled. Periphery of the last whorl marked by a spiral cord a little less strong than the first supraperipheral cord. Base short, broadly, openly umbilicated, well rounded, having six weakly tuberculated spiral cords between the peripheral cord and the umbilicus, the last one marking the edge of the umbilicus. These cords are of equal strength, and are separated by strong sulci almost as wide as the cords, which are crossed by numerous very fine axial threads. There is another spiral cord immediately within the umbilicus. The rest of the umbilicus is marked by fine axial threads only. Aperture oblique, subcylindric; posterior angle obtuse; outer lip rendered sinuous by the external sculpture; inner lip very thick, almost straight on the outer edge, the inner strongly curved; parietal wall glazed with a thick callus.

The type and another specimen, Cat. No. 250515, U.S.N.M., come from Port Alfred (Coll. No. 1388). The type has a little more than one and one-half whorls, and measures: Altitude, 5.5 mm.; greater diameter, 7 mm. Cat. No. 250552, U.S.N.M., contains four young specimens of the same species, also from Port Alfred (Coll. No. 1425).

CYNISCA ALFREDENSIS, new species.

Plate 29, figs. 10, 11, 12.

Shell depressed helicoid; bluish white, irregularly spotted with dots of carmine red on the upper surface. Nuclear whorls badly worn in all our specimens; the succeeding turns ornamented between the sutures by three strong spiral cords which are feebly tuberculated. The first of these cords is a little anterior to the summit, the space between the summit and the cord being almost as wide as the space between the first and median cords. The third cord is quite a bit posterior to the suture. The four sulci separating these three cords are deep and rounded and are crossed by very numerous, very fine, axial threads. Periphery of the last whorl marked by a spiral cord as strong as those between the sutures, which is separated from the first supraperipheral cord by a sulcus almost as wide as those on the spire and like these crossed by numerous fine axial lines. Base moderately rounded, marked with three strong spiral cords, of which the one joining the umbilicus is about twice as wide as the others. The three grooves separating these cords are about as wide as the

posterior two cords on the base. Umbilicus broad and funnel shaped, the umbilical wall being marked by three weak spiral cords. Aperture irregular, ovate; outer and basal lips very thick, rendered sinuous by the external sculpture; inner lip very thick, almost vertical, somewhat curved; parietal wall covered by a moderately thick callus.

The type and another specimen, Cat. No. 187109, U.S.N.M. (Coll. No. 655), come from Port Alfred. The type has four postnuclear whorls, and measures: Altitude, 4.5 mm.; greater diameter, 8 mm.; lesser diameter, 7 mm. Cat. No. 227781, U.S.N.M. (Coll. No. 876), contains three specimens from the same locality. Cat. No. 250513, U.S.N.M., another specimen from the same place (Coll. No. 1386).

CYNISCA AFRICANA, new species.

Plate 28, figs. 4, 5, 6.

Shell small, white. Nuclear whorls a little more than two, smooth, well rounded, separated by a well impressed suture. Postnuclear whorls almost two, well rounded, ornamented between the sutures by three strong spiral keels of which the first, which is a little anterior to the summit, is nodulous. The deep grooves separating these strong keels are a little wider than the keels. The axial sculpture is reduced to exceedingly fine retractive lines of growth. Periphery of the last whorl marked by a strong keel which equals the one posterior to it in strength and is separated from this by a sulcus as deep and broad as that which separates the keel posterior to it from its posterior neighbor. Base deeply umbilicated, moderately well rounded, marked by four strong spiral cords of which the last bounds the umbilicus. This and the one next to it are tuberculated, while the two posterior to it are smooth. The deep, broad sulci separating these spiral cords are crossed by fine axial lines of growth. Aperture oblique, oval; outer lip very thick; inner lip thick, decidedly curved; parietal wall covered with a thick callus.

The type and two specimens, Cat. No. 187098, U.S.N.M., come from Port Alfred (Coll. No. 642). The type measures: Altitude, 2 mm.; greater diameter, 2.6 mm. This species resembles *Cynisca forticostata* very much, but is at once distinguished from it by its minute size. Cat. No. 250514, U.S.N.M., one specimen from Port Alfred (Coll. No. 1387).

Genus TEINOSTOMA H. and A. Adams.

TEINOSTOMA AFRICANA Smith.

Cat. No. 86884, U.S.N.M., contains two specimens from Port Alfred (Coll. No. 254).

TEINOSTOMA ALFREDENSIS, new species.

Plate 28, figs. 7, 8, 9.

Shell small, white. Nucleus consisting of a single smooth turn. Postnuclear whorls two and one-third, well rounded, marked by

numerous equal and equally spaced, very fine, spiral striations and equally fine, decidedly, retractorily, curved lines of growth, the combination of the two lending the surface a minutely reticulated appearance. Sutures well impressed. Periphery of the last whorl well rounded. Base moderately rounded, depressed at the umbilical area which is covered by a strong callus. The base, excepting the umbilical area, which is smooth, is marked like the upper surface. Aperture exceedingly large, very oblique, subcircular; outer lip thick within, thinning to a sharp edge; inner lip very thick, strongly curved; parietal wall covered with an exceedingly thick callus, which renders the peritreme complete.

The type, Cat. No. 186865a, U.S.N.M., comes from Port Alfred (Coll. No. 235a). It measures: Altitude, 1.1 mm.; greater diameter, 2 mm.

Cat. No. 250537, U.S.N.M., contains another specimen from Port Alfred (Coll. No. 1410).

Family LIOTIIDAE.

Genus ILAIRA A. Adams.

ILAIRA FULGENS Gould.

Plate 29, figs. 4, 5, 6.

Liotia fulgens GOULD, Proc. Bost. Soc. Nat. Hist., vol. 7, p. 142, 1859.

Shell planorboid, yellow horn colored, with axial streaks of pale brown, and pearly iridescence shining through here and there. Whorls slightly rounded on the anterior half with a depressed concave area centering on the third, the outer fourth being flat. Entire surface marked by fine lines of growth only. Periphery of the shell with two very strong lamellar keels which inclose a broad deep channel between them. Base with a broad funnel-shaped umbilicus which is limited externally by a strong, well rounded, spiral cord. The space between the basal peripheral keel and the umbilical cord is flat. Aperture rendered pentagonal by the three cords, the posterior angle, and the junction of the basal lip with the columella.

Gould's type, Cat. No. 156, U.S.N.M., was collected by William Stimpson on the North Pacific Exploring Expedition at Simon's Bay, Cape of Good Hope. It has four whorls, and measures: Altitude, 2.2 mm.; greater diameter, 5 mm.; lesser diameter, 4 mm.

Three additional lots of this species are in the collection from Port Alfred: Cat. No. 250535, U.S.N.M., one young specimen (Coll. No. 1408); Cat. No. 250559, U.S.N.M., another young specimen (Coll. No. 1432); Cat. No. 250560, U.S.N.M., also a young specimen (Coll. No. 1433).

Genus LIPPISTES Montfort.

LIPPISTES GRAYI Adams.

Cat. No. 187148, U.S.N.M., two specimens from Port Alfred (Coll. No. 695).

Family VITRINELLIDAE.

Genus VITRINELLA C. B. Adams.

VITRINELLA RIFACA, new species.

Plate 37, figs. 1, 2, 3.

Shell small, planorboid, cream yellow. Nuclear whorls two, well rounded, smooth. Postnuclear whorls one and one-fifth, well rounded, marked by lines of growth only. Sutures strongly impressed. Periphery of the last whorl well rounded. Base very broadly umbilicated, showing all the whorls within, the individual whorls well rounded, smooth excepting the lines of growth. Aperture slightly oblique, subcircular, thin at the edge, thickened only at the parietal wall.

The type, Cat. No. 249775, U.S.N.M., comes from Port Alfred (Coll. No. 1047). It measures: Altitude, 0.5 mm.; greater diameter, 1.8 mm.

VITRINELLA CIFARA, new species.

Plate 37, figs. 7, 8, 9.

Shell small, depressed helicoid, translucent. Nuclear whorls a little more than two, well rounded, marked by fine lines of growth only. Postnuclear whorls well rounded, marked by strong lines of growth. Suture strongly impressed, almost channeled. Periphery strongly rounded. Base openly umbilicated, showing all the whorls within, which are well rounded and marked by lines of growth only. Aperture oblique, oval; outer lip thin; inner lip strongly curved; parietal wall covered with a thick callus which renders the peritreme complete.

The type, Cat. No. 249767, U.S.N.M., comes from Port Alfred (Coll. No. 1039). It has a little more than one postnuclear turn, and measures: Altitude, 0.5 mm.; greater diameter, 1.4 mm.

This species closely resembles the last, but is much more elevated, less widely umbilicated, and the whorls are bent more downward than in the preceding species.

VITRINELLA FICARA, new species.

Plate 34, figs. 1, 2, 3.

Shell rather large, planorboid, yellowish. Nuclear whorls one and one-half, very large, well rounded, smooth. Succeeding turns well rounded, marked by numerous very fine thread-like ribs, the spaces between which are marked by numerous fine spiral striations. Sutures strongly constricted. Periphery strongly rounded. Base openly umbilicated, showing all the whorls within, which are less rounded and marked like the spire. Aperture oblique, subcircular.

The type, Cat. No. 349775a, U.S.N.M., comes from Port Alfred (Coll. No. 1047a). It has a little more than one and one-half post-

nuclear whorls, and measures: Altitude, 1.2 mm.; greater diameter, 3 mm.

VITRINELLA FACIRA, new species.

Plate 34, figs. 5, 6, 7.

Shell small, very depressed helicoid, thin, bluish white. The nucleus consists of two stages: In the first, embracing one and one-half turns, the surface is smooth; in the second stage, which embraces a little more than a turn, the surface is marked by numerous, closely spaced, slender, spiral lirations. Postnuclear turns one and one-fourth, appressed at the summit, well rounded, smooth, marked by exceedingly fine lines of growth only. Periphery of the last whorl well rounded. Base openly umbilicated, the umbilicus occupying a little more than one-third of the diameter of the base, showing all the whorls within, which are well rounded and marked by lines of growth only. Aperture subcircular.

The type, Cat. No. 249767a, U.S.N.M., comes from Port Alfred (Coll. No. 1039). It measures: Altitude, 0.8 mm.; greater diameter, 2 mm.

VITRINELLA (DOCOMPHALA) ARIFCA, new species.

Plate 36, figs. 7, 8, 9.

Shell minute, rather thick, semitranslucent, bluish white. Nuclear whorls one and one-half, well rounded, polished, smooth. Post-nuclear turns one and one-fourth, strongly rounded, marked by two slender spiral cords at the summit and microscopic spiral striations on the rest of the surface. In addition to the spiral sculpture the turns are marked by fine lines of growth. On the outer edge of the aperture a number of strongly incised spiral scratches make their appearance. Sutures well impressed. Periphery of the last whorl well rounded. Base well rounded, strongly umbilicated. The umbilicus is limited exteriorly by a strong, slightly tuberculated, spiral cord. Three additional, strongly tuberculated, spiral cords, which decrease in strength from the outer edge inward, mark the inner wall of the umbilicus. The posterior portion of the base, between the limiting spiral cord of the umbilicus and the periphery, is smooth, while the other half adjoining the spiral cord is marked by decidedly retractorily slanting, oblique, slender, axial ribs which anastomose with the spiral cord limiting the umbilicus. Aperture circular; outer lip very thick; inner lip very strong and reflected, strongly curved within, the outer edge oblique and straight. The posterior angle of the aperture is filled by a strong callus.

The type and another specimen of this species, Cat. No. 250554, U.S.N.M., come from Port Alfred (Coll. No. 1427). The type measures: Altitude, 0.6 mm.; greater diameter, 1.1 mm.

Genus *CYCLOSTREMA* Marryat.*CYCLOSTREMA ALFREDENSIS*, new species.

Plate 35, figs. 6, 7, 8.

Shell small, milk white. Nuclear whorls two and one-half, well rounded, smooth. Post-nuclear whorls marked by four strong spiral keels, of which the first, which is the weakest, is a little anterior to the summit, while the second marks the very strong shoulder, the fourth forming the peripheral keel, and the third being half way between the second and the periphery. In addition to these spiral cords the whorls are marked by decidedly retractorily slanting axial riblets, which increase in strength and spacing as the shell progresses in size. About 25 of these occur on the last half of the last turn. These riblets cross the sulci, which are about twice as broad as the spiral cords, but do not seem to pass over the spiral cords. Periphery rendered angulated by the peripheral cord. Base well rounded, marked by three spiral cords, of which, the third and strongest bounds the moderately large umbilicus; the other two divide the space between this and the peripheral cord into three equal parts. The deep sulci are marked by the continuation of the axial riblets. Aperture oblique, subcircular; outer lip rendered decidedly sinuous at the margin by the external sculpture, which is also apparent through the substance of the shell; inner lip oblique, slightly curved and slightly reflected.

The type, Cat. No. 250501a, U.S.N.M., comes from Port Alfred (Coll. No. 1374). It has one and one-fifth postnuclear whorls, and measures: Altitude, 1.2 mm.; greater diameter, 1.7 mm.

Genus *CYCLOSTREMELLA* Bush.*CYCLOSTREMELLA FARICA*, new species.

Plate 32, figs. 7, 8, 9.

Shell small, depressed helicoid, very thin, translucent, bluish white. Nuclear whorls a little more than one, well rounded, smooth. The first half postnuclear whorl is ornamented with a strong keel a little anterior to the summit and another a little posterior to the periphery; the spaces between the keel and the summit, and between the keels are finely striated. These striations become stronger and the keels less pronounced after passing the first half turn, until on the final whorl the shell is marked with numerous equal and equally spaced fine spiral lirations, of which the first two near the summit are a little weaker than the rest and give this narrow portion almost the appearance of a smooth band. About 40 of these lirations occur between the summit and the periphery. Sutures well impressed. Periphery well rounded. Base strongly rounded, with a broad umbilicus which extends over half of the diameter of the base. The outer limit of the umbilicus is marked by a strong spiral cord; another

equally strong is about as far within the umbilicus as it is separated from the first of the five additional spiral cords which mark the inner umbilical wall. The space between the outer limiting cord and the periphery is marked by fine spiral lirations, equaling those on the spire in strength and spacing. Aperture subcircular; outer lip thin, showing the external sculpture within; inner lip strongly curved and slightly reflected.

The type, Cat. No. 250556, U.S.N.M., comes from Port Alfred (Coll. No. 1429). It has one and one-third postnuclear turns, and measures: Altitude, 1 mm.; greater diameter, 1.5 mm.

CYCLOSTREMELLA AFRICANA, new species.

Plate 29, figs. 1, 2, 3.

Shell purplish pink, obscurely dotted and flecked with white excepting the nuclear whorls, which are of yellowish horn color. Nuclear whorls two and one-half, smooth, forming a depressed helicoid spire. Postnuclear whorls well rounded, appressed at the summit, marked by many equal, and subequally spaced, fine, spiral lines which are about one-fourth as wide as the spaces that separate them. In addition to the spiral sculpture, the whorls are marked by fine lines of growth and irregularly distributed, strong, depressed lines which appear as feeble varicial markings. Sutures well marked. Periphery of the last whorl rounded. Base well rounded, very broadly, openly umbilicated, marked like the spire by fine, incised spiral lines and the axial sculpture, the strong impressed axial lines becoming accentuated at the umbilicus, rendering the outer umbilical edge strongly notched. Aperture subcircular; posterior angle slightly channeled; outer lip joining the basal lip in a strong, even curve; inner lip moderately thick, slightly revolute; parietal wall covered with a thick callus which is so developed as to give the aperture the appearance of being notched at this place.

The type and another specimen of this species, Cat. No. 187101, U.S.N.M., come from Port Alfred (Coll. No. 645). The type has a little more than one and one-half postnuclear whorls, and measures: Altitude, 1.7 mm.; greater diameter, 2.1 mm.

CAPORBIS, new genus.

Shell very small, sinistral, planorboid, marked with numerous lamellar, closely spaced, axial ribs.

Type.—*Caporbis africana*.

CAPORBIS AFRICANA, new species.

Plate 35, figs. 1, 2, 3.

Shell planorboid, sinistral, very small, bluish white, semitranslucent. Early whorls completely covered by the succeeding turns on the upper surface, where the last turn only is visible. This is marked by strong lamellar ribs which are decidedly sinuous and have

a retractive slant. These ribs become attenuated toward the summit to which they do not quite extend. They are about one-third as broad as the spaces that separate them. These spaces are marked near the periphery by a few, feebly expressed, fine, spiral lirations. Base sculpture similar to the upper surface except that only a very small portion of the smooth nuclear whorl is apparent. The ribs here decrease suddenly in size as they approach the inferior suture, and vanish just before reaching it. Aperture oblique, subcircular; outer lip thin, showing the external sculpture within; inner lip decidedly curved and somewhat reflected; parietal wall covered with a thick callus.

The type, Cat. No. 250519, U.S.N.M., comes from Port Alfred (Coll. No. 1392). It shows a little more than the last whorl, and measures: Altitude, 0.8 mm.; greater diameter, 1.8 mm.

Cat. No. 250518 contains another specimen from the same locality (Coll. No. 1391).

PONDORBIS, new genus.

Shell minute, dextral, depressed helicoid. Nuclear whorls smooth. Postnuclear whorls well rounded, ornamented with distantly spaced, very regular, sublamellar ribs.

Type.—*Pondorbis alfredensis*.

PONDORBIS ALFREDENSIS, new species.

Plate 36, figs. 1, 2, 3.

Shell minute, depressed helicoid, yellowish white. Nuclear whorls a little more than one, smooth, well rounded. Postnuclear whorls well rounded, marked at regularly spaced intervals by very regular, sublamellar, protractively curved, axial ribs, of which seventeen occur upon the first whorl, while the one-fifth of a whorl beyond the first postnuclear whorl contains ten riblets which are less strongly developed, and more closely spaced. Periphery strongly curved. Base well rounded, openly umbilicated, showing all the whorls within, marked like the spire. Aperture circular; peristome complete.

The type, Cat. No. 250557, U.S.N.M., comes from Port Alfred (Coll. No. 1430). It measures: Altitude, 0.2 mm.; greater diameter, 0.8 mm.

Genus DISCOPSIS de Folin.

DISCOPSIS PLANULATA Sowerby.

Cat. No. 186883, U.S.N.M., contains two specimens from Port Alfred (Coll. No. 253). Cat. No. 227784, U.S.N.M., three specimens from the same locality (Coll. No. 879). Cat. No. 227785, U.S.N.M., three specimens from the same source (Coll. No. 880).

DISCOPSIS ALFREDENSIS, new species.

Plate 31, figs. 1, 2, 3.

Shell small, sublenticular, white, excepting the nuclear whorls, which are pale chestnut brown. Nuclear whorls two, small, well-rounded, forming an elevated helicoid spire with strongly impressed suture. Postnuclear whorls very wide, moderately rounded, marked by decidedly retractive, wavy riblets, which, on the last half of the last volution, become irregular and strongly wavy. These riblets are about one-fourth as wide as the shallow concave spaces that separate them. The latter are crossed by spiral threads which are almost equal to the axial riblets in strength. There are about 20 of these between the summit and the periphery on the last turn. On the last half of the last turn these also become decidedly irregular and wavy, and the entire sculpture of this portion of the shell assumes a crinkly appearance. Periphery strongly angulated. Base with a very broad funnel-shaped umbilicus, which occupies fully half the space, and which is bordered by a tumid area at its exterior limit; the space between this tumid area and the peripheral angle is slightly concave. The entire surface of the base is marked by the continuation of the axial riblets, which are somewhat sinuous and become closer approximated here than on the spire. These riblets extend strongly into the umbilicus. The spaces between the riblets are marked by fine spiral striations. Aperture very large, very oblique, the basal and outer lip forming a decided angle at the periphery; posterior angle obtuse; outer lip decidedly patulous, thin, showing the external sculpture within; inner lip curved, thin, slightly reflected, the outer and the inner lip almost approaching each other on the parietal wall.

The type and another specimen of this species, Cat. No. 250533, U.S.N.M., come from Port Alfred (Coll. No. 1406). The type has 1.1 postnuclear whorls, and measures: Greater diameter, 1.8 mm.

DISCOPSIS AFRICANA, new species.

Plate 33, figs. 5, 6, 7.

Shell small, discoid, bluish white. Nuclear whorls two, well rounded, smooth, forming a depressed helicoid spire with strongly impressed sutures. Postnuclear whorls one and one-fifth, expanding rapidly in size, marked with a strong, lamellar, wavy, peripheral keel, which has a ruffle-like appearance. The space between the summit and this keel is marked with spiral cords, of which 17 are apparent on the outside of the outer lip. Of these, the fourth below the summit forms a strong shoulder, the fourth, sixth, ninth, eleventh, thirteenth, and fifteenth being stronger than the rest, while the remainder are of about equal strength. The space between the one

at the summit and the fourth is somewhat flattened, while that of the rest is evenly rounded. Base openly umbilicated; umbilicus occupying about one-third of the width of the base; bounded by a very slender spiral cord. The space from the base of the ruffle to this cord is evenly well rounded. The entire surface of the base is marked by rather strong lines of growth and microscopic spiral striations. This sculpture extends also into the umbilicus. Aperture very oblique, irregularly triangular; posterior angle acute; outer lip rendered denticulated by the external sculpture; inner lip slender, strongly sigmoid, and slightly reflected.

The type, Cat. No. 250561, U.S.N.M., comes from Port Alfred (Coll. No. 1434). Its greatest diameter is 2.3 mm.

DISCOPSIS TURTONI, new species.

Plate 33, figs. 1, 2, 3.

Shell small, discoidal, semitranslucent, bluish white. Nuclear whorls one and one-half, smooth, well rounded, forming a depressed helicoid spire with strongly impressed sutures. Postnuclear whorls two and one-fifth, broad, well-rounded, with strongly impressed sutures marked on the upper surface by rather strong, decidedly, retractively curved lines of growth. Periphery of the last whorl acutely keeled. Base very widely, openly umbilicated, there being scarcely any external limit to the umbilicus, all the whorls showing within. A slender spiral cord encircles the base about one-fourth of the distance anterior to the periphery. On the base the lines of growth assume a thread-like appearance, becoming stronger within the umbilicus. The entire base is marked by microscopic spiral striations. Aperture very oblique, of irregular outline; outer lip thin, sinuous, showing the external markings within; inner lip decidedly flexuose, thin.

The type and another specimen, Cat. No. 249766, U.S.N.M., come from Port Alfred (Coll. No. 1038). The type measures: Greatest diameter, 2.5 mm.; lesser diameter, 1.7 mm.

Genus *LEPTOGYRA* Bush.

LEPTOGYRA AFRICANA, new species.

Plate 36, figs. 4, 5, 6.

Shell very minute, semitranslucent, bluish white. Nuclear whorls two, well rounded, smooth, forming a depressed helicoid spire. Postnuclear whorls well rounded, marked by numerous fine, equal and equally spaced, incised spiral striations of which about 35 occur between the summit and the well-rounded periphery of the last whorl. The axial sculpture consists of fine lines of growth only. Base strongly rounded, somewhat inflated, with a moderately broad umbilicus marked by the continuation of the fine lines of growth, which grow a little stronger as they approach the umbilicus, and on the posterior

half by incised lines which correspond in every way with those on the spire. The anterior half is free of spiral sculpture. Aperture oblique, subcircular; posterior angle obtuse; outer lip rather thick, strongly curved; inner lip strongly curved and slightly reflected. A thick callus fills the posterior angle of the aperture.

The type, Cat. No. 250553, U.S.N.M., comes from Port Alfred (Coll. No. 1426). It has one and one-fourth postnuclear whorls, and measures: Altitude, 0.6 mm.; greater diameter, 1 mm.

Family NERITIDAE.

Genus NERITA Lamarck.

NERITA ALBICILLA Linnaeus.

Cat. No. 21820, U.S.N.M., one specimen from Algoa Bay. Cat. No. 97991, U.S.N.M., four specimens from Kaffraria, South Africa. Cat. No. 187086, U.S.N.M., four specimens from Port Alfred (Coll. No. 629). Cat. No. 250486, an additional specimen from the same locality (Coll. No. 1359). Cat. No. 272143, U.S.N.M., two from South Africa.

Genus NERITINA Lamarck.

NERITINA, species ?

Cat. No. 187088, U.S.N.M., contains a specimen from Port Alfred (Coll. No. 631), which is different from any of the Neritinas heretofore reported from South Africa, or known to us, but is too poor to serve for a description. Cat. No. 250487, U.S.N.M., must be referred here for the same reason (Coll. No. 1360).

NEPIONIC SHELLS.

Plate 30, figs. 6, 7.

Cat. No. 187087, U.S.N.M., contains two nepionic shells of neritid shape, from Port Alfred (Coll. No. 630). They are very finely, spirally lirate. I do not know where they belong, but place them here simply on account of their shape. Cat. No. 249760, U.S.N.M., contains two additional specimens of the same species (Coll. No. 1032).

Family HALIOTIDAE.

Genus HALIOTIS Linnaeus.

HALIOTIS MIDAE Linnaeus.

Cat. No. 43068, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 89103, U.S.N.M., three specimens from the Cape of Good Hope. Cat. No. 98002, U.S.N.M., six specimens from Albany, South Africa. Cat. No. 98003, U.S.N.M., eight specimens from Albany. Cat. No. 186886, U.S.N.M., three specimens from Port Alfred (Coll. No. 256). Cat. No. 187118, U.S.N.M., one specimen from the same place (Coll. No. 664). Cat. No. 249895, U.S.N.M., another specimen from the same locality (Coll. No. 1167).

HALIOTIS SANGUINEA Hanley.

Cat. No. 85, U.S.N.M., seven specimens collected by William Stimpson on the North Pacific Exploring Expedition at the Cape of Good

Hope. Cat. No. 16671, U.S.N.M., two specimens from the Cape of Good Hope. Cat. No. 42848, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 89089, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 98004, U.S.N.M., two specimens from Albany. Cat. No. 186885, U.S.N.M., one specimen from Port Alfred (Coll. No. 255). Cat. No. 227786, U.S.N.M., three specimens from the same locality (Coll. No. 881).

HALIOTIS PERTUSA Reeve.

Cat. No. 33, U.S.N.M., three specimens collected by William Stimpson on the North Pacific Exploring Expedition at the Cape of Good Hope.

HALIOTIS PARVA Linnaeus.

Cat. No. 187116, U.S.N.M., two specimens from Port Alfred (Coll. No. 662). Cat. No. 187117, U.S.N.M., one specimen from the same place (Coll. No. 663). Cat. No. 176, U.S.N.M., one specimen collected by William Stimpson on the North Pacific Exploring Expedition at False Bay. Cat. No. 16970, U.S.N.M., one specimen from Cape of Good Hope. Collected by Carpenter.

HALIOTIS ALFREDENSIS, new species.

Plate 24, figs. 7, 8.

Shell elongate-ovate, irregularly mottled with chestnut brown and very pale olive buff flecks and dottings. The space between the base and the perforations is brown, with narrow radiating bands of pale olive buff which are about one-fourth as wide as the brown bands. The sculpture consists of fine, radiating, decidedly retractorily slanting threads on the early whorls, which become somewhat coarser, wider, and less sharply defined on the last half turn, and numerous fine spiral lirations which become more or less wavy anteriorly. The space between the perforations and the base is slightly concave on the posterior half and well rounded on the anterior half, and marked by the continuation of the lines of growth and wavy spiral striations. The nacre of the interior has a rosy flush, and a weak red wash within the spire. The spiral sculpture is apparent on the inside. This shell has the shape of *Haliotis midae*, but lacks the rugose sculpture of the exterior, the sculpture resembling more that of *Haliotis pertusa*, but differing from this in being much finer and more regular.

The type, Cat. No. 250517, U.S.N.M., comes from Port Alfred (Coll. No. 1390). It measures: Altitude, 12 mm.; length, 55 mm.; diameter, 39.5 mm.

Family **SCISSURELLIDAE**.

Genus **SCISSURELLA** Orbigny.

SCISSURELLA JUCUNDA Smth.

Three lots of this species are in the collection of the United States National Museum, all from Port Alfred. They are: Cat. No. 187097,

three specimens (Coll. No. 641); Cat. No. 250524, one specimen (Coll. No. 1397); Cat. No. 249761, four specimens (Coll. No. 1033).

Genus *SCHISMOPE* Jeffreys.

SCHISMOPE INSIGNIS Smith.

Cat. No. 249762, U.S.N.M., four specimens from Port Alfred (Coll. No. 1034). Cat. No. 249763, U.S.N.M., one specimen from the same locality (Coll. No. 1035).

Family *FISSURELLIDAE*.

Genus *FISSURELLA* Bruguiere.

FISSURELLA NATALENSIS Krauss.

Cat. No. 97992, U.S.N.M., two specimens from Albany. Cat. No. 186890, U.S.N.M., one from Port Alfred (Coll. No. 260).

FISSURELLA MUTABILIS Sowerby.

Cat. No. 150, U.S.N.M., nine specimens collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay, Cape of Good Hope. Cat. No. 43075, U.S.N.M., two specimens from the Cape of Good Hope. Cat. No. 89909, U.S.N.M., two specimens from the same place. Cat. No. 98030, U.S.N.M., three specimens from Albany, South Africa. Cat. No. 227799, U.S.N.M., six specimens from Port Alfred (Coll. No. 894). Cat. No. 227800, U.S.N.M., six specimens from the same locality (Coll. No. 895). Cat. No. 249777, U.S.N.M., four young specimens from the same place (Coll. No. 1049).

Genus *PUPILLAEA* Gray.

PUPILLAEA APERTA Sowerby.

Cat. No. 17329, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 89908, U.S.N.M., two specimens from the Cape of Good Hope. Cat. No. 98034, U.S.N.M., seven specimens from Albany, South Africa. Cat. No. 186887, U.S.N.M., one from Port Alfred (Coll. No. 257). Cat. No. 186888, U.S.N.M., three from the same source (Coll. No. 258). Cat. No. 186889, U.S.N.M., one from the same place (Coll. No. 259). The following seven lots showing variations of color pattern are also from Port Alfred: Cat. No. 227796, U.S.N.M., six specimens (Coll. No. 891); Cat. No. 227797, U.S.N.M., four specimens (Coll. No. 892); Cat. No. 227798, U.S.N.M., four specimens (Coll. No. 893); Cat. No. 250570, U.S.N.M., one specimen (Coll. No. 1443); Cat. No. 249776, U.S.N.M., three specimens (Coll. No. 1048); Cat. No. 249780, U.S.N.M., three specimens (Coll. No. 1052); Cat. No. 249781, U.S.N.M., three specimens (Coll. No. 1053).

Genus *FISSURIDEA* Swainson.*FISSURIDEA ELIZABETHAE* Smith.

Cat. No. 186891, U.S.N.M., one specimen from Port Alfred (Coll. No. 261).

FISSURIDEA SPRETA Smith.

Cat. No. 186893, U.S.N.M., one specimen from Port Alfred (Coll. No. 263).

FISSURIDEA ELEVATA Dunker.

Cat. No. 98040, U.S.N.M., two specimens from Peddie or Albany, South Africa. Cat. No. 186894, U.S.N.M., one specimen from Port Alfred (Coll. No. 264).

FISSURIDEA CALYCVLATA Sowerby.

Cat. No. 98039, U.S.N.M., four specimens from Peddie, South Africa. Cat. No. 186892, U.S.N.M., one specimen from Port Alfred (Coll. No. 262). Cat. No. 249778, U.S.N.M., three young specimens from the same place (Coll. No. 1050). Cat. No. 249779, U.S.N.M., three additional young specimens from the same locality (Coll. No. 1051).

FISSURIDEA AUSTRALIS Krauss.

Cat. No. 227801, U.S.N.M., two specimens from Port Alfred (Coll. No. 896).

FISSURIDEA PARVIFORATA Smith.

Cat. No. 187134, U.S.N.M., three specimens from Port Alfred (Coll. No. 680). Cat. No. 250569, U.S.N.M., an additional specimen from Port Alfred (Coll. No. 1442).

Genus *PUNCTURELLA* Lowe.*PUNCTURELLA AFRICANA*, new species.

Plate 30, figs. 4, 5.

Shell small, white, exceedingly delicate. The nucleus consisting of a little more than one whorl, the coil resting on the left side of the postnuclear portion of the shell. The postnuclear part of the shell increases very rapidly in size, the sides being marked by about 40 thread-like radial riblets which are a little more densely spaced on the anterior portion. These are crossed almost at right angles by a second series of raised threads which equal the first in strength and spacing, thus lending the surface a finely reticulated aspect. The plug filling the notch is transversely notched. The shell is so thin that all the external markings are seen within.

The type, Cat. No. 187135, U.S.N.M., comes from Port Alfred (Coll. No. 681). It measures: Altitude, 1.1 mm.; long diameter, 1.9 mm.; transverse diameter, 1.3 mm.

Order POLYPLACOPHORA.

Family ISCHNOCHITONIDAE.

Genus CALLOCHITON Gray.

CALLOCHITON CASTANEUS Wood.

Cat. No. 186907, U.S.N.M., contains four valves of this species from Port Alfred (Coll. No. 277). Cat. No. 249828, U.S.N.M., contains two additional complete specimens from the same locality (Coll. No. 1100).

Genus ISCHNOCHITON Gray.

ISCHNOCHITON CRAWFORDI Sykes.

Cat. No. 250603, U.S.N.M., contains a specimen from Port Alfred (Coll. No. 1476). Cat. No. 187140, U.S.N.M., contains a single valve from the same place (Coll. No. 686).

ISCHNOCHITON CYANEOPUNCTATUS Krauss.

Cat. No. 125380, U.S.N.M., contains a specimen obtained on the United States Eclipse Expedition of 1890 at Cape Town.

ISCHNOCHITON ONISCUS Krauss.

Two lots of this species were obtained by William Stimpson on the North Pacific Exploring Expedition: One, Cat. No. 122, U.S.N.M., a complete specimen and a lot of valves, at the Cape of Good Hope; the other, Cat. No. 143, U.S.N.M., one specimen at Simons Bay, Cape of Good Hope. In addition to these there are 35 lots of this species, which are extremely variable in color markings, in the collection of the United States National Museum, from Port Alfred, as follows: Cat. No. 187137, one specimen (Coll. No. 683); Cat. No. 187136, one specimen (Coll. No. 682); Cat. No. 187138, one specimen (Coll. No. 684); Cat. No. 187140a, one valve (Coll. No. 686a); Cat. No. 249803, three specimens (Coll. No. 1075); Cat. No. 249804, three specimens (Coll. No. 1076); Cat. No. 249805, three specimens (Coll. No. 1077); Cat. No. 249806, three specimens (Coll. No. 1078); Cat. No. 249807, two specimens (Coll. No. 1079); Cat. No. 249808, three specimens (Coll. No. 1080); Cat. No. 249809, three specimens (Coll. No. 1081); Cat. No. 249810, three specimens (Coll. No. 1082); Cat. No. 249811, three specimens (Coll. No. 1083); Cat. No. 249812, one specimen (Coll. No. 1084); Cat. No. 249813, three specimens (Coll. No. 1085); Cat. No. 249814, two specimens (Coll. No. 1086); Cat. No. 249815, three specimens (Coll. No. 1087); Cat. No. 249816, two specimens (Coll. No. 1088); Cat. No. 249817, three specimens (Coll. No. 1089); Cat. No. 249822, two specimens (Coll. No. 1094); Cat. No. 250606, one specimen (Coll. No. 1479); Cat. No. 250608, one specimen (Coll. No. 1481); Cat. No. 250609, one specimen (Coll. No. 1482); Cat. No. 250610, two specimens (Coll. No. 1483); Cat. No. 250611, two speci-

mens (Coll. No. 1484); Cat. No. 250612, one specimen (Coll. No. 1485); Cat. No. 250613, one specimen (Coll. No. 1486); Cat. No. 250614, three specimens (Coll. No. 1487); Cat. No. 250615, two specimens (Coll. No. 1488); Cat. No. 250616, one specimen (Coll. No. 1489); Cat. No. 250617, one specimen (Coll. No. 1490); Cat. No. 250618, two specimens (Coll. No. 1491); Cat. No. 250619, one specimen (Coll. No. 1492); Cat. No. 250620, one specimen (Coll. No. 1493); Cat. No. 250621, one specimen (Coll. No. 1494).

ISCHNOCHITON TIGRINUS Krauss.

Cat. No. 177, U.S.N.M., contains a specimen collected by William Stimpson on the North Pacific Exploring Expedition on the Cape of Good Hope. Cat. No. 110252, U.S.N.M., contains three specimens from the same place. In addition to these, there are four lots in the collection of the United States National Museum from Port Alfred, as follows: Cat. No. 249818, one specimen (Coll. No. 1090); Cat. No. 250604, one specimen (Coll. No. 1477); Cat. No. 250607, one specimen (Coll. No. 1480); Cat. No. 250624, one specimen (Coll. No. 1497).

Genus DINOPLAX Carpenter.

DINOPLAX GIGAS Gmelin.

Cat. No. 110201, U.S.N.M., one specimen from the Cape of Good Hope. In addition to this, the United States National Museum has seven lots from Port Alfred, as follows: Cat. No. 186908, two valves (Coll. No. 278); Cat. No. 229832, one specimen (Coll. No. 1104); Cat. No. 249829, four specimens (Coll. No. 1101); Cat. No. 249830, two complete specimens (Coll. No. 1102); Cat. No. 250600, one specimen (Coll. No. 1473); Cat. No. 250601, one specimen (Coll. No. 1474); Cat. No. 250602, one specimen (Coll. No. 1475).

DINOPLAX GIGAS ALFREDENSIS, new subspecies.

Plate 39, figs. 1, 2.

Shell similar to *Dinoplax gigas* in outline and coloring, but with the sculpture in every way much finer. Radiating lines of the lateral areas and the anterior plate only very feebly expressed, with the central very finely truncate as compared with *D. gigas*.

The type, Cat. No. 249831, U.S.N.M., comes from Port Alfred (Coll. No. 1103); it measures: Length, 62 mm.; diameter, 22 mm. Another specimen is registered as 249820, U.S.N.M., and comes from the same locality (Coll. No. 1092).

DINOPLAX FOSSUS Sykes.

Cat. No. 249823, U.S.N.M., contains a young specimen from Port Alfred (Coll. No. 1095).

Family ACANTHOCHITIDAE.

Genus ACANTHOCHITES Risso.

ACANTHOCHITES GARNOTI Blainville.

Cat. No. 173, U.S.N.M., four specimens collected by William Stimpson on the North Pacific Exploring Expedition at the Cape of Good Hope. In addition to these there are five lots in the collection of the United States National Museum from Port Alfred, as follows: Cat. No. 186909, three valves (Coll. No. 279); Cat. No. 187139, six valves (Coll. No. 685); Cat. No. 249819, three specimens (Coll. No. 1091); Cat. No. 249821, two specimens (Coll. No. 1093); Cat. No. 249824 three specimens (Coll. No. 1096).

ACANTHOCHITES CARPENTERI Pilsbry.

Cat. No. 250605, U.S.N.M., contains a specimen from Port Alfred (Coll. No. 1478).

Family CHITONIDAE.

Genus CHITON Linnaeus.

CHITON TULIPA Quey and Gaimard.

Cat. No. 19300, U.S.N.M., three valves from the Cape of Good Hope. Cat. No. 110222, U.S.N.M., three specimens from the Cape of Good Hope. Cat. No. 110218, U.S.N.M., two specimens from the same locality. Cat. No. 110250, one specimen from Algoa Bay. In addition to these, there are four lots in the collection of the United States National Museum from Port Alfred, as follows: Cat. No. 249825, six specimens (Coll. No. 1097); Cat. No. 249826, three specimens (Coll. No. 1098); Cat. No. 249827, one specimen (Coll. No. 1099); Cat. No. 186906, one specimen (Coll. No. 276).

CHITON, species?

There are valves of two lots of Chitons, which we are unable to place, in the collection from Port Alfred, as follows: Cat. No. 250622, U.S.N.M. (Coll. No. 1495); Cat. No. 250623, U.S.N.M. (Coll. No. 1496).

Class SCAPHOPODA.

Order SOLENOCONCHA.

Family DENTALIIDAE.

Genus DENTALIUM Linnaeus.

DENTALIUM STRIGATUM Gould.

Plate 44, fig. 5.

Dentalium strigatum GOULD, Proc. Bost. Soc. Nat. Hist., vol. 7, p. 166, 1859.

Shell moderately curved, white. Marked by 13 strong equal and equally spaced longitudinal cords, the spaces between which are marked by 9-11 fine incised lines. In addition to this longitudinal sculpture the entire surface is crossed by very fine lines of growth.

Gould's cotypes, Cat. No. 159, U.S.N.M., four specimens collected by William Stimpson on the North Pacific Exploring Expedition at False Bay, Cape of Good Hope. The specimen figured measures: Length, 15.1 mm.; diameter, 2.5 mm.

DENTALIUM EXASPERATUM Sowerby.

Cat. No. 186910, U.S.N.M., three specimens from Port Alfred (Coll. No. 280). Cat. No. 250592, U.S.N.M., six additional specimens from Port Alfred (Coll. No. 1465).

DENTALIUM REGULARE Smith.

Cat. No. 187150, U.S.N.M., one specimen from Port Alfred (Coll. No. 697). Cat. No. 250593, U.S.N.M., four specimens from the same locality (Coll. No. 1466).

DENTALIUM, species?

Cat. No. 249795, U.S.N.M., contains two fragments of a *Dentalium*, which we are unable to determine, from Port Alfred (Coll. No. 1067).

Genus SCHIZODONTALIUM Sowerby.

SCHIZODONTALIUM PLURIFISSURATUM Sowerby.

Cat. No. 163019, U.S.N.M., one specimen, dredged in 100 fathoms off Cape St. Blaize, South Africa.

Class PELECYPODA.

Order PRIONODESMACEA.

Family NUCULIDAE.

Genus NUCULA Lamarck.

NUCULA SCULPTURATA Sowerby.

Cat. No. 186966, U.S.N.M., two specimens from Port Alfred (Coll. No. 338).

NUCULA NUCLEUS Linnaeus.

Cat. No. 249893, U.S.N.M., contains a very young specimen of a *Nucula*, which appears to be of this species, from Port Alfred (Coll. No. 1165).

Family LIMOPSIDAE.

Genus LIMOPSIS Sasso.

LIMOPSIS PUMILIS Smith.

Cat. No. 186924, U.S.N.M., six valves from Port Alfred (Coll. No. 294).

Family ARCIDAE.

Genus GLYCIMERIS Da Costa.

GLYCIMERIS QUEKETTI Sowerby.

Cat. No. 186923, U.S.N.M., three valves from Port Alfred (Coll. No. 293). Cat. No. 251067a, U.S.N.M., contains a very young specimen of this species (Col. No. 1584a).

Genus *ARCA* Lamarck.*ARCA ACUMINATA* Krauss.

Cat. No. 187158, U.S.N.M., one specimen from Port Alfred (Coll. No. 705).

Genus *FOSSULARCA* Cossmann.*FOSSULARCA GIBBA* Krauss.

Cat. No. 186921, U.S.N.M., one specimen from Port Alfred (Coll. No. 291).

FOSSULARCA GRADATA Bröderip and Sewerby.

Cat. No. 187155, U.S.N.M., contains one specimen and three valves of this species from Port Alfred (Coll. No. 702).

Genus *BARBATIA* (Gray) Adams.*BARBATIA ALFREDENSIS*, new species.

Plate 46, figs. 9, 10.

Shell rhomboidal. Surface covered with a thick, dark brown epidermis from which project numerous imbricating scales. The umbones are situated in the anterior third of the entire length of the shell. The hinge line is very slightly arcuated, the ventral margin usually incurved. Anterior end much narrower than the broad posterior end. Entire surface marked with numerous fine radiating riblets which are crossed by concentric lines of growth rendering the sculpture of the surface somewhat reticulated. The interior of the shell is bluish white, excepting that portion which lies dorsal and posterior to a line passing from the umbones to the posterior ventral margin, which is chestnut brown.

The type and three specimens, Cat. No. 186922, U.S.N.M., come from Port Alfred (Coll. No. 292). The type measures: Length, 34 mm.; height, 18 mm.; thickness, 12.5 mm.

This is what has probably been listed as *Arca obliquata* Gray, a Philippine Island species, which differs from the present species by its much larger size, detailed sculpture, and color.

BARBATIA, species?

Cat. No. 18804, U.S.N.M., contains a specimen from Natal which we are unable to refer to any of the known species, but which is too poor to serve for a diagnosis.

BARBATIA, species?

Cat. No. 187157, U.S.N.M., contains six valves of a *Barbatia* from Port Alfred, which we are unable to refer to any of the described species, but is too poor to serve for a diagnosis (Coll. No. 704). Cat. No. 249850, U.S.N.M., contains six additional valves of the same species, in the same condition, from the same place (Coll. No. 1122).

BARBATIA CAFRIA, new species.

Plate 38, figs. 1, 5.

Shell small, rather gibbous, the umbones salmon colored, the rest yellowish white. The epidermis, when present, dark chocolate brown. The two valves similarly sculptured, the epidermis forming strong setae on every third radiating riblet, while the two intermediate ones seem simply to be covered with a smooth integument. There are 29 of the setaceous ribs on each valve and double that number of the intermediary ones. The riblets bearing the setae are strongly nodulose, while the others are almost smooth. Ligamental area narrow, marked by transverse grooves. Interior white.

The type and another specimen of this species, Cat. No. 249849, U.S.N.M., come from Port Alfred (Coll. No. 1121). The type measures: Altitude, 8.5 mm.; length, 14.2 mm.; diameter, 8.6 mm.

Cat. No. 187156, U.S.N.M., contains four additional valves from the same place (Coll. No. 703).

Family PINNIDAE.

Genus PINNA Lamarck.

PINNA SQUAMIFERA Sowerby.

Cat. No. 187159, U.S.N.M., two specimens from Port Alfred (Coll. No. 706). Cat. No. 227814, U.S.N.M., contains two additional specimens from the same locality (Coll. No. 909).

Genus ATRINA Gray.

ATRINA ALFREDENSIS, new species.

Plate 40, fig. 3.

Shell depressed pyriform; horn colored, darker at the tip. The interior is dull horn colored, excepting the tip, which is smoky pearly. Upper side slightly curved; the ventral edge decidedly concave; posterior portion decidedly expanded. The surface is marked with five poorly developed and poorly expressed radiating ridges beset with decidedly elevated squamations, which are strongest on the three median ridges. The ventral border is rendered rasp-like by fine poorly developed squamations.

The type and another specimen, Cat. No. 227815, U.S.N.M., come from Port Alfred (Coll. No. 910). The type measures: Length, 73 mm.; greater diameter, 50 mm.

ATRINA AFRA Sowerby (?).

Cat. No. 187160, U.S.N.M., contains fragments of probably this species from Port Alfred (Coll. No. 707). Cat. No. 250991, U.S.N.M., contains another fragment of this species, from the same locality (Coll. No. 1508).

Genus HOCHSTETTERIA Vélain.

HOCHSTETTERIA LIMOIDES Smith.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186925, contains three valves of this species (Coll. No. 295); Cat. No. 186930, one valve (Coll. No. 300); Cat. No. 251067, one specimen (Coll. No. 1584).

HOCHSTETTERIA VELAINI Smith.

Cat. No. 186926, U.S.N.M., two specimens from Port Alfred (Coll. No. 296).

HOCHSTETTERIA ALFREDENSIS, new species.

Plate 39, figs. 6, 7.

Shell white, variously mottled with brown. Prodissoconch forming a conspicuous shield which is separated from the rest of the shell by a strongly raised cord. The anterior and posterior lateral portion of the succeeding part forms almost an isosceles triangle, the basal portion of which is well rounded. The valves are marked by fifteen moderately strong, very regular radiating threads, and very regularly spaced, equally strong, concentric threads, which form squarish pits on the early portion of the shell and elongate pits near the base. The junction of the radiate and concentric threads forms feeble, rounded nodules. The hinge is shown in our figure.

Cat. No. 182925a, U.S.N.M., contains the type and two additional specimens from Port Alfred (Coll. No. 295a). The type measures: Altitude, 3.6 mm.; length, 3.3 mm. Cat. No. 249855, U.S.N.M., contains another specimen from the same place (Coll. No. 1127).

HOCHSTETTERIA PARAMOEA, new species.

Plate 39, fig. 4.

Shell semitranslucent, white. Prodissoconch forming a conspicuous shield which is separated from the rest of the shell by a strongly raised cord. The shield itself is marked by very fine, closely spaced, radiating threads. The anterior lateral margin of the succeeding part slightly concave; posterior slightly convex; basal margin strongly rounded. Outer surface marked by nine equal, and equally spaced, regular, slender, radiating threads, and equally strong, very regularly spaced, concentric threads, the junction of the two forming feeble nodules.

Cat. No. 249854, U.S.N.M., contains the type and another specimen from Port Alfred (Coll. No. 1126). The type measures: Altitude, 4.2 mm.; length, 2.1 mm.

Genus *PHILOBRYA* Carpenter.*PHILOBRYA AFRICANA*, new species.

Plate 46, figs. 1, 2.

small, translucent, white, broadly triangular, with the beaks at apex of the triangle. Dorsal edge slightly curved, ventral at concave; posterior portion well rounded. The junction of anterior and dorsal edges form somewhat of an angle and give it an alate aspect. The external surface of the shell is marked with concentric lines of growth and numerous, exceedingly fine, finely radiating, hair-like streaks which give to the surface a striate aspect.

The type and another specimen, Cat. No. 187154, U.S.N.M., come from Port Alfred (Coll. No. 701). The type measures: Length, 5 mm.; width, 4 mm.

In addition to these, the United States National Museum contains, all from Port Alfred, as follows: Cat. No. 227811, six valves (Coll. No. 906); Cat. No. 227812, five valves (Coll. No. 907); Cat. No. 249841, two specimens (Coll. No. 1113); Cat. No. 251001, one valve (Coll. No. 1518); Cat. No. 251007, one valve (Coll. No. 1524).

Family *PTERIIDAE*.Genus *MARGARITIPHORA* Muhlfield.*MARGARITIPHORA NATALENSIS* Jameson.

No. 17225, U.S.N.M., contains a specimen from the Cape of Good Hope.

MARGARITIPHORA CAPENSIS Sowerby.

No. 186914, U.S.N.M., one specimen from Port Alfred (Coll. No. 1518).

Family *OSTREIDAE*.Genus *OSTREA* Lamarck.*OSTREA ALGOENSIS* Sowerby.

No. 175, U.S.N.M., contains a specimen collected by William B. Sturges on the North Pacific Exploring Expedition at Simons Bay, South Africa, at low water. In addition to this, the United States National Museum contains 14 lots from Port Alfred, as follows: Cat. No. 249833, four specimens (Coll. No. 710); Cat. No. 187164, one specimen (Coll. No. 711); Cat. No. 187165, eight valves (Coll. No. 712); Cat. No. 249833, two young specimens (Coll. No. 1105); Cat. No. 249834, one specimen (Coll. No. 1498); Cat. No. 250982, two valves (Coll. No. 1499); Cat. No. 250983, one specimen (Coll. No. 1500);

Cat. No. 250984, one valve (Cat. No. 1501); Cat. No. 250985, one valve (Coll. No. 1502); Cat. No. 250986, four valves (Coll. No. 1503); Cat. No. 250987, two valves (Coll. No. 1504); Cat. No. 250989, three very young valves (Coll. No. 1506); Cat. No. 250990, one valve (Coll. No. 1507); Cat. No. 250992, one valve (Coll. No. 1509).

Family PECTINIDAE.

Genus PECTEN Müller

PECTEN NATALENSIS Smith.

Cat. No. 17429, U.S.N.M., nine valves from South Africa. Cat. No. 43171, U.S.N.M., seven valves from Cape of Good Hope. Cat. No. 186913, U.S.N.M., one specimen from Port Alfred (Coll. No. 283). Cat. No. 249852, U.S.N.M., three valves from the same place (Coll. No. 1124).

PECTEN SULCICOSTATUS Sowerby.

Cat. No. 228, U.S.N.M., a fragment collected by William Stimpson on the North Pacific Exploring Expedition at the Cape of Good Hope. Cat. No. 187151, U.S.N.M., two valves from Port Alfred (Coll. No. 698). Cat. No. 249851, U.S.N.M., two additional valves from the same place (Coll. No. 1123).

Family SPONDYLIDAE.

Genus PLICATULA Lamarck.

PLICATULA SQUAMOSISSIMA Smith.

Cat. No. 251009, U.S.N.M., contains a specimen of this species from Port Alfred (Coll. No. 1526).

Family LIMIDAE.

Genus LIMA (Bruguiera) Cuvier.

LIMA PERFECTA Smith.

Cat. No. 186912, U.S.N.M., one specimen from Port Alfred (Coll. No. 282).

LIMA ROTUNDATA Sowerby.

Cat. No. 17802, U.S.N.M., two valves from the Cape of Good Hope. Cat. No. 186911, U.S.N.M., one specimen from Port Alfred (Coll. No. 281). Cat. No. 250995, U.S.N.M., one valve from the same locality (Coll. No. 1512). Cat. No. 251004, U.S.N.M., two very young valves from the same place (Coll. No. 1521).

LIMA AFRICANA, new species.

Plate 38, fig. 4.

Shell small, thin, inaequivalve, bluish white, gaping at the posterior lateral border and at the middle of the ventral border. Hinge line slightly sloping in both directions from the umbones. The lateral margin is concave immediately below the junction of the hinge line, then strongly curved toward the anterior border. The ventral margin is also slightly concave immediately below the hinge line, then almost straight, curving suddenly upon reaching the anterior margin. The exterior sculpture consists of about fifty fine radiating riblets. The posterior ventral and lateral borders are not ribbed. Interior bluish white, showing the external riblets by transmitted light.

The type, Cat. No. 249853, U.S.N.M., comes from Port Alfred (Coll. No. 1125). It measures: Length, 13.5 mm.; diameter, 9 mm.; thickness, 5 mm.

This is evidently the shell which has been listed as *Lima hians tenera* Turton. It is not that species however. The sculpture is much finer and less regularly fluted than in *tenera*, and the shell is much shorter and more rounded than *tenera*, the latter being elongate.

LIMA, species?

Cat. No. 251002, U.S.N.M., contains a very young *Lima*, from Port Alfred, which I am unable to identify (Coll. No. 1519). Cat. No. 250376, U.S.N.M., contains another very young *Lima* from Port Alfred, in the same state (Coll. No. 1249).

Family ANOMIIDAE.

Genus ANOMIA Müller.

ANOMIA EPHIPIUM Linnaeus.

Cat. No. 136, U.S.N.M., contains a young specimen collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. In addition to this, there are six lots of young specimens in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 187162, three valves (Coll. No. 709); Cat. No. 249836, three valves (Coll. No. 1108); Cat. No. 250988, four valves (Coll. No. 1505); Cat. No. 250993, one valve (Coll. No. 1510); Cat. No. 250531, one valve (Coll. No. 1404); Cat. No. 251060, one valve (Coll. No. 1577).

ANOMIA PATELLIFORMIS Linnaeus.

There are five lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No.

187161, five valves (Coll. No. 708); Cat. No. 187162, four valves (Coll. No. 709); Cat. No. 249834, one specimen (Coll. No. 1106); Cat. No. 249835, one specimen and three valves (Coll. No. 1107); Cat. No. 250591, one specimen (Coll. No. 1464).

Family MYTILIDAE.

Genus MYTILUS Bolten.

MYTILUS MERIDIONALIS Krauss.

Cat. No. 17960, U.S.N.M., one specimen from Natal. Cat. No. 17963, U.S.N.M., one specimen from South Africa. Cat. No. 98049, U.S.N.M., one specimen from Albany. Cat. No. 250998, U.S.N.M., contains two valves from Port Alfred (Coll. No. 1515).

MYTILUS PERNA Linnaeus.

The United States National Museum has four lots of this species, all from Port Alfred, as follows: Cat. No. 186915, two specimens (Coll. No. 285); Cat. No. 186916, one specimen (Coll. No. 286); Cat. No. 250999, one valve (Coll. No. 1516); Cat. No. 249838, two specimens (Coll. No. 1110).

MYTILUS PERNA TRIGONIA Krauss.

There are three lots of this subspecies in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 187152, one valve (Coll. No. 699); Cat. No. 249837, two specimens (Coll. No. 1109); Cat. No. 249842, two specimens (Coll. No. 1114).

MYTILUS VARIABILIS Krauss.

There are four lots of this species in the collection of the United States National Museum, all from the Cape of Good Hope, as follows: Cat. No. 17973, one specimen; Cat. No. 43183, six specimens; Cat. No. 76032, two specimens; Cat. No. 125368, twenty-four specimens, collected by the United States Eclipse Expedition; Cat. No. 250997, U.S.N.M., one specimen from Port Alfred (Coll. No. 1514).

MYTILUS VARIABILIS STRIATA Krauss.

There are three lots of this subspecies in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 187153, four specimens (Coll. No. 700); Cat. No. 249839, two specimens (Coll. No. 1111); Cat. No. 249844, two specimens (Coll. No. 1116).

Genus MODIOLA Lamarck.

MODIOLA TENERRIMA Smith.

There are three lots of this species in the collection of the United States National Museum, from Port Alfred, as follows: Cat. No. 186917, two specimens (Coll. No. 287); Cat. No. 249847, one valve (Coll. No. 1119); Cat. No. 249846, two specimens (Coll. No. 1119).

MODIOLA CAPENSIS Krauss.

Cat. No. 167, U.S.N.M., one specimen collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. Cat. No. 43184, U.S.N.M., three specimens from the Cape of Good Hope. In addition to these, there are three lots in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186918, two and one-half specimens (Coll. No. 288); Cat. No. 249843, two specimens (Coll. No. 1115); Cat. No. 249845, one specimen (Coll. No. 1117).

MODIOLA AURICULATA Krauss.

Cat. No. 227813, U.S.N.M., contains three specimens of this species from Port Alfred (Coll. No. 908). Cat. No. 249840, U.S.N.M., contains another specimen from the same place (Coll. No. 1112).

MODIOLA LIGNEA Reeve.

Cat. No. 186919, U.S.N.M., one specimen from Port Alfred (Coll. No. 289).

Genus CRENELLA Brown.**CRENELLA STRIATISSIMA Sewerby.**

Three lots of this species are in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 187183, two valves (Coll. No. 734); Cat. No. 227820, two valves (Coll. No. 915); Cat. No. 251062, a young specimen (Coll. No. 1579).

CRENELLA ALFREDENSIS, new species.

Plate 41, fig. 1; plate 49, fig. 1.

Shell small, milk white, of very regular oval outline, the outer surface marked by numerous, very fine, radiating threads and rather strong incremental lines.

The type and another valve, Cat. No. 251006, U.S.N.M., come from Port Alfred (Coll. No. 1523). It measures: Altitude, 3.2 mm.; length, 2.1 mm.

This species agrees with *Crenella striatissima* in size, but differs markedly from it in outline, *striatissima* having a mytiloid shape, while the present species is practically a perfect oval in outline.

Genus MODIOLARIA Beck.**MODIOLARIA CUNEATA Gould.**

Plate 42, figs. 5, 6.

Modiolaria cuneata GOULD, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 38, 1861.

Shell moderately large, cream yellow, considerably inflated. Umbones prominent, extending to the anterior limit of the shell. Dorsal edge short, posterior dorsal edge sloping abruptly, curving

ventrally. Basal edge somewhat sinuous. Anterior end with 16 radiating, low, flattened cords; posterior end with 17.

Gould's cotypes, six specimens, Cat. No. 126, U.S.N.M., were collected by William Stimpson on the North Pacific Exploring Expedition at Simon's Bay. The specimen figured measures: Length, 11.8 mm.; altitude, 7 mm.; diameter, 7 mm. Cat. No. 186920, U.S.N.M., one specimen from Port Alfred (Coll. No. 290).

MODIOLARIA AFRICANA, new species.

Plate 41, fig. 2.

Shell small, pale yellow. Hinge margin almost straight; posterior lateral margin evenly, gradually rounded, the anterior lateral shortly, strongly rounded, the basal slightly emarginate. The posterior portion is marked by about 50 rather strong, radiating, axial riblets, while the extreme anterior bears 12. In addition to the radiating sculpture, the shell is marked by rather strong, concentric threads which render the radiating riblets crenulated at their junction. The area devoid of radiating sculpture is equal to about one-third of the entire length of the shell at the basal margin.

The type, Cat. No. 251000, U.S.N.M., comes from Port Alfred Coll. No. 1517). It measures: Altitude, 2 mm.; length, 3.5 mm.

MODIOLARIA IMA, new species.

Plate 40, figs. 4, 5.

Shell pale green, variously mottled with brown. Dorsal margin slightly curved, the posterior lateral strongly, evenly so, the anterior lateral very strongly, shortly curved, the basal slightly emarginate anteriorly. The posterior portion of the shell is marked by 16, broad, low, rounded, radiating riblets, which become narrower and closer spaced toward the dorsal margin. The anterior end is marked by 4, weak, radiating riblets. In addition to the radiating sculpture, the shell is marked by irregular incremental lines, which pass over the radiating sculpture as fine threads, but do not render them crenulated. The area devoid of radiating sculpture is equal to about two-fifths of the length of the shell at the ventral border.

The type and another valve, Cat. No. 249848, U.S.N.M., come from Port Alfred (Coll. No. 1120). The type measures: Altitude, 4 mm.; length, 7 mm.

Order ANOMALODESMACEA.

Family SOLEMYIDAE.

Genus SOLEMYA Lamarck.

SOLEMYA, species?

Cat. No. 250996, U.S.N.M., contains fragments of a young specimen too poor to be determined, from Port Alfred (Coll. No. 1513).

Family LYONSIDAE.

Genus LYONSIA Turton.

LYONSIA, species?

Cat No. 249877, U.S.N.M., contains two valves of a *Lyonsia* too poor to be determined, from Port Alfred (Coll. No. 1149).

Family THRACIDAE.

Genus THRACIA Blainville.

THRACIA, species?

There are five lots of young *Thracia* in the collection of the United States National Museum, all from Port Alfred, but they are too young to be properly determined: Cat. No. 187181, one valve (Coll. No. 732); Cat. No. 187186, one valve (Coll. No. 737); Cat. No. 249878, two valves (Coll. No. 1150); Cat. No. 249881, two specimens (Coll. No. 1153); Cat. No. 249882, three specimens (Coll. No. 1154).

Genus CLISTOCONCHA Smith.

CLISTOCONCHA INSIGNIS Smith.

There are six lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 227819, three specimens (Coll. No. 914); Cat. No. 249868, one specimen (Coll. No. 1140); Cat. No. 249869, one specimen (Coll. No. 1141); Cat. No. 249870, one specimen (Coll. No. 1142); Cat. No. 249879a, one specimen (Coll. No. 1151a); Cat. No. 249880, two specimens (Coll. No. 1152).

Order TELEODESMACEA.

Family CRASSATELLITIDAE.

Genus CRASSATELLITES Krüger.

CRASSATELLITES ACUMINATA Sowerby.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186933, one and one-half specimens (Coll. No. 303); Cat. No. 251017, two valves (Coll. No. 1534); Cat. No. 251018, another young valve (Coll. No. 1535).

Genus CUNA Hedley.

CUNA CONCENTRICA, new species.

Plate 47, fig. 3; plate 52, figs. 11, 12.

Shell minute, thin, bluish white, semitransparent, having an almost triangular outline, with the posterior dorsal margin quite evenly curved and the anterior slightly concave. Entire surface marked by very regular, strong, threadlike, concentric rings, which are a

little wider than the spaces that separate them. Interior showing the external sculpture through the substance of the shell. Entire inner basal margin marked by alternating squarish teeth and depressions, forming a series of sockets and teeth which alternate in the opposing valves. The character of the hinge is shown in our detailed figure.

The type and another valve, Cat. No. 251049, U.S.N.M., come from Port Alfred (Coll. No. 1566). The type measures: Altitude, 1.2 mm.; length, 1.2 mm.

Family CARDITIDAE.

Genus CARDITA Bruguiere.

CARDITA VARIEGATA TURGIDA Krauss.

Cat. No. 32055, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 43172, U.S.N.M., two valves from the Cape of Good Hope.

CARDITA (CARDITAMERA) LATICOSTATA Smith.

Cat. No. 186929, U.S.N.M., four valves from Port Alfred (Coll. No. 299). Cat. No. 251010, two valves from the same locality (Coll. No. 1527).

Genus VENERICARDIA Lamarck.

VENERICARDIA ELATA Sowerby.

Cat. No. 186931, U.S.N.M., two specimens from Port Alfred (Coll. No. 301).

VENERICARDIA AFRICANA, new species.

Plate 48, fig. 3; plate 54, figs. 5, 6.

Shell small, rather thick, rose colored. Umbones bent decidedly forward, forming a rather strong-pointed hook. Surface marked by 12 strong, rounded, radiating ribs, of which the central ones are the heaviest. These ribs give the ventral edge a somewhat fluted appearance. In addition to these radiating ribs, the shell is marked with strong, concentric, sublamellar threads, which pass equally strong over the ribs and the intercostal spaces. The character of the hinge is shown in our detailed sketch.

Cat. No. 187171, U.S.N.M., contains the type, which comes from Port Alfred (Coll. No. 720). It measures: Altitude, 3.1 mm.; length, 2.8 mm.

Cat. No. 251012, U.S.N.M., contains two additional valves from the same locality (Coll. No. 1529).

Genus THECALIA H. and A. Adams.

THECALIA CONCAMERATA Bruguiere.

Cat. No. 137, U.S.N.M., 12 specimens collected by William Stimpson on the North Pacific exploring expedition at the Cape of Good Hope.

Cat. No. 98038, U.S.N.M., four specimens from Albany. Cat. No. 186927, U.S.N.M., two specimens from Port Alfred (Coll. No. 297). Cat. No. 227817, U.S.N.M., two specimens from the same locality (Coll. No. 912).

Genus *MIODONTISCUS* Dall.

MIODONTISCUS MINIMUS Smith.

There are four lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186932, four and one-half specimens (Coll. No. 302); Cat. No. 249856, four valves (Coll. No. 1128); Cat. No. 249857, four valves (Coll. No. 1129); Cat. No. 251008, two valves (Coll. No. 1525).

Family *CONDYLOCARDIIDAE*.

Genus *CONDYLOCARDIA* Smith.

CONDYLOCARDIA IO, new species.

Plate 48, fig. 1; plate 54, figs. 7, 8.

Shell irregularly oval, rather inflated, thin, semitranslucent. Prodissoconch forming a conspicuous shield having an elevated mammillate area at its apex, separated from the succeeding portion of the shell by a strongly raised ridge. Succeeding portion of the shell marked by very fine concentric threads which become slightly stronger as the shell attains maturity. The character of the hinge is shown by the detailed sketch.

Cat. No. 251066, U.S.N.M., contains two specimens of this species from Port Alfred (Coll. No. 1583). The type measures: Altitude, 2.3 mm.; length, 2.6 mm.

Genus *CARDITELLA* Smith.

CARDITELLA RUGOSA Sewerby.

Cat. No. 186928, U.S.N.M., three specimens from Port Alfred (Coll. No. 298).

Genus *CARDITOPSIS* Smith.

CARDITOPSIS ALFREDENSIS, new species.

Plate 48, fig. 4; plate 54, figs. 3, 4.

Shell minute, subtrigonal, rather thick, bluish white, marked by feebly impressed lines of growth, and very weak, low, radiating threads. Edge of the shell thick all around. Basal margin weakly crenulated. The character of the hinge is shown in our detailed sketch.

The type and another valve, Cat. No. 251005, U.S.N.M., come from Port Alfred (Coll. No. 1522). The type measures: Altitude, 2 mm.; length, 1.7 mm.

Family ASTARTIDAE.

Genus DIGITARIA Wood.

DIGITARIA AFRICANA, new species.

Plate 45, fig. 4; plate 54, fig. 9.

Shell oval, bluish white. Umbones almost at the anterior end. Surface marked with moderately strong lines of growth and numerous, feebly expressed, radiating riblets which are about as wide as the spaces that separate them. In addition to this sculpture, the surface is marked by rather regularly spaced, strongly incised grooves, which pass obliquely across the lines of growth, bending upward toward the lunule and posteriorly toward the hinge line. The latter ones, however, terminate at the posterior ventral margin. The external sculpture is shown on the inner surface. Ventral border finely denticulated. The hinge is shown in our detailed figure.

Cat. No. 187184, U.S.N.M., contains the type, which comes from Port Alfred (Coll. No. 735). This is a left valve, and measures: Altitude, 3 mm.; length, 3.7 mm.

The hinge in the type, when compared with *Digitaria digitaria* Linnaeus, appears reversed; that is, our left valve corresponds with the armature of the right valve of that species.

Family CHAMIDAE.

Genus CHAMA Bruguiere.

CHAMA GRYPHINA Lamarck (?).

Cat. No. 250994, U.S.N.M., contains a rather poor specimen, from Port Alfred, which may be this species (Coll. No. 1511).

Family LUCINIDAE.

Genus LUCINA Bruguiere.

LUCINA GLOBOSA Forskål.

Cat. No. 98235, U.S.N.M., one valve collected by Dr. Holub, from Swartkop River, South Africa. Cat. No. 186964, U.S.N.M., two valves from Port Alfred (Coll. No. 335). Cat. No. 251020, U.S.N.M., an additional valve from the same place (Coll. No. 1537).

Genus LORIPES Poli.

LORIPES CLAUSUS Philippi.

Cat. No. 186961, U.S.N.M., one specimen from Port Alfred (Coll. No. 332).

Genus PHACOIDES Blainville.

PHACOIDES VALIDA Smith.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186963, two specimens (Coll. No. 334); Cat. No. 187187, two valves (Coll. No. 738); Cat. No. 227818, one specimen (Coll. No. 913).

PEACOIDES DESPECTA Smkh.

Cat. No. 186962, U.S.N.M., one specimen from Port Alfred (Coll. No. 333).

Family DIPLDONTIDAE.

Genus DIPLDONTA Bronn.

DIPLDONTA AFRICANA, new species.

Plate 47, fig. 5; plate 53, figs. 9, 10.

Shell small, donaciform, thin, semitranslucent. Exterior marked by numerous, regular and regularly spaced, slender, concentric threads, which are about as wide as the spaces that separate them. The incised lines appear as hydrophanous bands. In addition to the concentric markings, there are irregularly disposed, somewhat discontinuous, slender, radiating, hydrophanous lines. The entire external sculpture is equally visible within. The character of the hinge is shown in our detailed sketch.

The type, Cat. No. 251029, U.S.N.M., comes from Port Alfred (Coll. No. 1546). It measures: Altitude, 1.5 mm.; length, 2.2 mm. Cat. No. 251047, U.S.N.M., contains another specimen from the same locality (Coll. No. 1564).

DIPLDONTA ALMO, new species.

Plate 47, fig. 1; plate 54, fig. 2.

Shell very thin, semitranslucent, bluish white. Umbones median. Anterior and posterior dorsal margins sloping evenly. Surface marked with numerous, equal and equally spaced, slender, concentric threads which are about half as wide as the spaces that separate them. In addition to this, there are numerous, very fine, radiating striations. All the external markings are seen on the inner surface. The character of the hinge is shown in our detailed sketch.

The type, Cat. No. 251048, U.S.N.M., comes from Port Alfred (Coll. No. 1565). It measures: Altitude, 2.8 mm.; length, 3.5 mm.

Genus FELANIELLA Dall.

FELANIELLA ALFREDENSIS, new species.

Plate 48, fig. 5; plate 53, figs. 7, 8.

Shell minute, bluish white, semitransparent, irregularly oval in outline. Umbones projecting anteriorly. Surface marked by fine incremental lines and very fine, somewhat divaricating, closely spaced, radiating striations. The character of the hinge is shown in our detailed sketch.

The type and another specimen of this species, Cat. No. 251044, U.S.N.M., come from Port Alfred (Coll. No. 1561). The type measures: Altitude, 1.5 mm.; length, 1.9 mm.

Genus UNGULINA Daudin.

UNGULINA ALFREDENSIS, new species.

Plate 43, figs. 1, 2; plate 54, figs. 1, 10.

Shell of varying outline, thin. Outer surfaces marked with irregular growth lines and numerous fine papillæ, which give the surface a shagreened appearance. The character of the hinge is shown in our detailed sketch.

There are one complete young specimen and three valves of this species, Cat. No. 187189, in the collection of the United States National Museum, from Port Alfred (Coll. No. 740). I figure the complete individual and the largest valve. The large specimen measures: Altitude, 12.5 mm.; length, 18 mm. The complete specimen measures: Altitude, 7 mm.; length, 8.6 mm.

Family GALEOMMATIDÆ.

Genus SCINTILLA Deshayes.

SCINTILLA TURTONI, new species.

Plate 45, fig. 3; plate 49, figs. 4, 5.

Shell very regularly oval, bluish white, semitranslucent. Umbones a little anterior to the middle. Outer surface marked by strong concentric lines of growth and exceedingly feeble, microscopic, radiating striations. The hinge is shown in our detailed figure.

The type and two additional valves, Cat. No. 249887, U.S.N.M., come from Port Alfred (Coll. No. 1159). It measures: Altitude, 6.3 mm.; length, 8.5 mm.

One of these loose valves with the type is somewhat larger, measuring: Altitude, 7 mm.; length, 9.5 mm.

There are two additional lots of this species in the United States National Museum, from Port Alfred, as follows: Cat. No. 187173, two valves (Coll. No. 722); Cat. No. 187174, one valve (Coll. No. 723).

Family SPORTELLIDÆ.

Genus BASTEROTIA Mayer.

BASTEROTIA TRICOSTALIS Sowerby.

Cat. No. 251051, U.S.N.M., contains a valve of this species from Port Alfred (Coll. No. 1568).

Family LEPTONIDÆ.

Genus ERYCINA (Lamarck) Récluz.

ERYCINA FIRMATA Gould.

Lepton firmatus GOULD, Proc. Boston Soc. Nat. Hist., vol. 8, p. 35, 1861.

Plate 43, figs. 3, 4; plate 49, figs. 6, 7.

Shell irregularly triangular, thin, bluish white, the umbones a little posterior to the middle; the posterior dorsal margin sloping

less abruptly; the anterior dorsal margin slightly rounded, the posterior less so and longer than the anterior; the ventral well rounded. The outer surface marked by numerous, rather strong, concentric lines of growth. The hinge is shown in our detailed figure.

Cat. No. 161, U.S.N.M., contains Gould's type of this species, which was collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay, Cape of Good Hope. The type is a worn specimen, and measures: Altitude, 3.7 mm.; length, 4.8 mm.

ERYCINA SUBRADIATA Carpenter.

Plate 46, figs. 5, 6; plate 49, fig. 2.

Shell small, of almost oval outline, with the umbones almost central. The outer surface marked by very strong, irregularly-spaced, lines of growth, between which very fine striations are present, and numerous, fine, incised, radiating lines, which are strongest anteriorly and posteriorly. The hinge is shown in our detailed figure.

The type, Cat. No. 147, U.S.N.M., was collected by William Stimpson, on the North Pacific Exploring Expedition at Simons Bay, Cape of Good Hope. It measures: Altitude, 3 mm.; length, 3.6 mm.

ERYCINA ALFREDENSIS, new species.

Plate 43, figs. 7, 8; plate 50, figs. 1, 2.

Shell ovate, with the umbones decidedly posterior to the middle. Outer surface marked by fine lines of growth and numerous exceedingly minute tubercles, which lend the surface a shagreened effect. The character of the hinge is shown in our detailed sketch.

The type and another specimen, Cat. No. 187191, U.S.N.M., come from Port Alfred (Coll. No. 742). The type measures: Altitude, 3.9 mm.; length, 4.9 mm.

ERYCINA IMA, new species.

Plate 42, figs. 7, 8; plate 50, figs. 3, 4.

Shell small, oval. Outer surface polished, covered with an exceedingly thin periostracum which lends the shell an iridescent appearance. The umbones are slightly posterior to the middle. Outer surface marked by fine lines of growth only. The character of the hinge is shown in our detailed sketch.

The type and three other specimens, Cat. No. 187192, U.S.N.M., come from Port Alfred (Coll. No. 743). The type measures: Altitude, 1.7 mm.; length, 2.2 mm.

ERYCINA CARIFA, new species.

Plate 45, fig. 6; plate 50, figs. 5, 6.

Shell small, subcircular, slightly broader posteriorly than anteriorly, with the umbones almost median. Outer surface covered by a very thin periostracum which lends the shell an iridescent appear-

ance. The surface markings consist of somewhat irregularly spaced and developed fine lines of growth, and microscopic, radiating striations. The character of the hinge is shown in the detailed sketch.

The type, Cat. No. 251041, U.S.N.M., comes from Port Alfred (Coll. No. 1558). It measures: Altitude, 3 mm.; length, 3.5 mm.

ERYCINA RIFACA, new species.

Plate 39, fig. 3; plate 50, figs. 7, 8.

Shell very minute, subcircular, with the umbones median. Outer surface covered by an exceedingly thin periostracum which lends it an iridescent appearance. The outer surface is marked by exceedingly fine lines of growth only. The prodissoconch is strongly constricted at its junction with the succeeding portion of the shell. The character of the hinge is shown in the detailed figure.

The type and another specimen, Cat. No. 251068, U.S.N.M., come from Port Alfred (Coll. No. 1585). The type measures: Altitude, 1 mm.; length, 1.2 mm.

ERYCINA, species?

Cat. No. 251039, U.S.N.M., contains a single valve of a rather large triangular species, from Port Alfred, which we are unable to identify (Coll. No. 1556).

ERYCINA, species?

Cat. No. 187195, U.S.N.M., contains a single worn valve of another species from Port Alfred, which we are also unable to identify (Coll. No. 746).

Genus *BORNIA* Philippi.

BORNIA FORTIDENTATA Smith.

Plate 50, figs. 9, 10.

Cat. No. 186970, U.S.N.M., contains three specimens from Port Alfred (Coll. No. 343). Cat. No. 186971, U.S.N.M., contains three additional specimens of this species from the same locality (Coll. No. 344).

BORNIA FARICA, new species.

Plate 41, fig. 6; plate 51, figs. 1, 2.

Shell small, subcircular, thin, bluish white. Umbones decidedly anterior to the middle. Outer surface marked by numerous, closely spaced, concentric threads which are separated by grooves about as wide as the threads. The character of the hinge is shown in our detailed sketch.

The two cotypes, Cat. No. 251061, U.S.N.M., representing two opposite valves, come from Port Alfred (Coll. No. 1578). The larger of these measures: Altitude, 2.5 mm.; length, 3 mm.

BORNIA AFRICA, new species.

Plate 41, fig. 7; plate 51, fig. 4.

Shell broadly oval. Umbones decidedly anterior to the middle. Outer surface of the shell marked by numerous very closely spaced, fine, concentric threads, which are a little broader than the spaces that separate them, and numerous, very fine, microscopic, radiating striations. The character of the hinge is shown in our detailed sketch.

The type, Cat. No. 249894b, U.S.N.M., comes from Port Alfred (Coll. No. 1166b). It consists of a right valve, and measures: Altitude, 2.3 mm.; length, 2.8 mm.

BORNIA (PYTHINA) ROTUNDATA Deshayes.

Plate 51, figs. 5, 6.

Cat. No. 186969, U.S.N.M., contains two and one-half specimens of this species from Port Alfred (Coll. No. 342).

BORNIA (PYTHINA) AFRICANA, new species.

Plate 42, figs. 1, 2; plate 51, fig. 3.

Shell rather large, oval, slightly emarginate at the base, with the umbones decidedly posterior to the middle. The outer surface is marked by fine lines of growth and minute tubercles, which lend it a shagreened appearance. On the anterior end the shell has a few, ill-defined, raised, radiating threads.

The type and another valve, Cat. No. 187190, U.S.N.M., come from Port Alfred (Coll. No. 741). The type measures: Altitude, 9.5 mm.; length, 13.8 mm.

Three additional lots are in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 251011, a young specimen (Coll. No. 1528); Cat. No. 251038, one valve (Coll. No. 1555); Cat. No. 251056, one young valve (Coll. No. 1573).

Genus ROCHEFORTIA Vélain.**ROCHEFORTIA CONVEXA Gould.**

Plate 45, figs. 1, 2; plate 47, fig. 4, young; plate 51, figs. 7, 8, hinge.

Kellia convexa GOULD, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 34, 1861.

Shell of suboval outline, wax yellow. Umbones almost median, with the dorsal margin slanting almost equally, anteriorly and posteriorly. Both ends equally rounded, and the basal margin gently curved. Entire surface marked by rather irregular, fine lines of growth. Hinge as shown in Plate 51, figs. 7, 8.

Gould's cotypes, Cat. No. 24244, U.S.N.M., two specimens, were collected by William Stimpson on the North Pacific Exploring Expe-

Alfred in 12 fathoms at the Cape of Good Hope. The larger of the plate 45, figs. 1, 2, measures: Length, 4.3 mm.; altitude, 3 mm.; diameter, 2 mm.

BOCHEPORTIA SERRATA Sacc.

Plate 51, figs. 3, 12.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 249887, one and one-half specimens (Coll. No. 339); Cat. No. 249888, two specimens (Coll. No. 1153); Cat. No. 251052, two valves (Coll. No. 1153).

BOCHEPORTIA BATHYDROMA Sacc.

Plate 51, figs. 1, 2.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 249889, one valve (Coll. No. 734); Cat. No. 249890, two specimens (Coll. No. 1153); Cat. No. 249891, two specimens (Coll. No. 1153).

BOCHEPORTIA BICHA, new species.

Plate 51, fig. 5; plate 52, figs. 3, 4.

Shell oval, rather thick, with the umbones almost median. The surface marked by somewhat irregular, slender, closely spaced lines of growth, and weak, very fine, radiating striations. The character of the hinge is shown in the detailed sketch.

The type, Cat. No. 251040, U.S.N.M., comes from Port Alfred (Coll. No. 1153). It measures: Altitude, 3 mm.; length, 3.8 mm.

BOCHEPORTIA ELISA, new species.

Plate 41, fig. 5; plate 52, figs. 5, 6.

Shell readily oval, minute, very thin, semitranslucent, the umbones situated at the anterior end. Outer surface marked by numerous fine, subvertical lines of growth, which appear as very slender streaks. No radiating sculpture is apparent. The character of the hinge is shown in our detailed sketch.

The type, Cat. No. 251045, U.S.N.M., comes from Port Alfred (Coll. No. 1153). It measures: Altitude, 1.4 mm.; length, 1.8 mm.

BOCHEPORTIA MILDA, new species.

Plate 41, fig. 6; plate 52, figs. 9, 10.

Shell readily oval covered by an exceedingly thin periostracum which gives it an iridescent appearance. Umbones slightly anterior. The posterior margin slightly truncated. Surface marked by numerous very close, subvertical, somewhat wavy threads, which are a little wider than the spaces between them, and numerous very fine radiating striae.

, which are best pronounced on the posterior portion of the shell. The character of the hinge is shown in our detailed sketch. The type and another valve, Cat. No. 249894, U.S.N.M., come from Port Alfred (Coll. No. 1166). The type measures: Altitude, 2.2 mm.; length, 2.5 mm.

ROCHFORTIA HELENA, new species.

Plate 42, figs. 3, 4; plate 47, fig. 2; plate 52, figs. 7, 8.

very minute, of somewhat irregular cuneate outline, thin, semicircular. Umbones a little posterior to the anterior margin. Surface marked by exceedingly fine, concentric threads only. The character of the hinge is shown in our detailed sketch.

The type and another specimen of this species, Cat. No. 187193, U.S.N.M., come from Port Alfred (Coll. No. 744). The type measures: Altitude, 1.2 mm.; length, 1.5 mm.

No. 251019, U.S.N.M. contains three additional valves of this species from the same place (Coll. No. 1536).

ROCHFORTIA IO, new species.

Plate 39, fig. 5; plate 53, figs. 5, 6.

very minute, of irregular cuneate outline. Prodissoconch marked by fine radiating striations. The succeeding portion, which is separated by a slight constriction from the prodissoconch, is marked by numerous, rather strong, concentric threads, which are about as wide as the spaces that separate them. The character of the hinge is shown in our detailed sketch.

The type and two other specimens, Cat. No. 251043, U.S.N.M., come from Port Alfred (Coll. No. 1560). The type measures: Altitude, 0.9 mm.; length, 1.1 mm.

ROCHFORTIA FARMA, new species.

Plate 48, fig. 2; plate 53, figs. 1, 2.

small, oval, covered with a very thin yellowish periostracum, the umbones about one-third of the entire length of the shell posterior to the anterior margin. Surface marked with rather coarse somewhat irregular lines of growth, and numerous, fine, radiating lines which are of varying strength and irregular spacing. The character of the hinge is shown in our detailed figure.

The type and another valve, Cat. No. 249892, U.S.N.M., come from Port Alfred (Coll. No. 1164). The type measures: Altitude, 1.9 mm.; length, 2.5 mm.

Genus LASEA Leach.

LASEA TURTONI, new species.

Plate 42, figs. 9, 10; plate 53, figs. 3, 4.

irregularly, broadly oval, white, with the early portion and the apical area suffused with rose purple. The umbones are about opposite the

dition in 12 fathoms at the Cape of Good Hope. The larger of these, plate 45, figs. 1, 2, measures: Length, 4.2 mm.; altitude, 3 mm.; diameter, 2 mm.

ROCHEFORTIA SIMILIS Smith.

Plate 51, figs. 9, 10.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186967, one and one-half specimens (Coll. No. 339); Cat. No. 249886, two specimens (Coll. No. 1158); Cat. No. 251052, two valves (Coll. No. 1569).

ROCHEFORTIA NATALENSIS Smith.

Plate 52, figs. 1, 2.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186185, one valve (Coll. No. 736); Cat. No. 249890, two specimens (Coll. No. 1162); Cat. No. 249891, two specimens (Coll. No. 1163).

ROCHEFORTIA ENORA, new species.

Plate 45, fig. 5; plate 52, figs. 3, 4.

Shell oval, rather thick, with the umbones almost median. The surface marked by somewhat irregular, slender, closely spaced lines of growth, and weak, very fine, radiating striations. The character of the hinge is shown in the detailed sketch.

The type, Cat. No. 251040, U.S.N.M., comes from Port Alfred (Coll. No. 1557). It measures: Altitude, 3 mm.; length, 3.8 mm.

ROCHEFORTIA ELSA, new species.

Plate 41, fig. 3; plate 52, figs. 5, 6.

Shell broadly oval, minute, very thin, semitranslucent, the umbones being situated at the anterior end. Outer surface marked by numerous, very fine, concentric lines of growth, which appear as very slender threads. No radiating sculpture is apparent. The character of the hinge is shown in our detailed sketch.

The type, Cat. No. 251045, U.S.N.M., comes from Port Alfred (Coll. No. 1562). It measures: Altitude, 1.4 mm.; length, 1.8 mm.

ROCHEFORTIA MILDA, new species.

Plate 47, fig. 6; plate 52, figs. 9, 10.

Shell small, broadly oval, covered by an exceedingly thin periostracum, which lends it an iridescent appearance. Umbones slightly anterior to the middle. The posterior margin slightly truncated; the anterior well rounded. Surface marked by numerous very closely spaced, slender, concentric threads, which are a little wider than the spaces that separate them, and numerous very fine radiating axial

3, which are best pronounced on the posterior portion of the hinge. The character of the hinge is shown in our detailed sketch. The type and another valve, Cat. No. 249894, U.S.N.M., come from Port Alfred (Coll. No. 1166). The type measures: Altitude, 2.2 mm.; length, 2.5 mm.

ROCHEFORTIA HELENA, new species.

Plate 42, figs. 3, 4; plate 47, fig. 2; plate 52, figs. 7, 8.

Very minute, of somewhat irregular cuneate outline, thin, semicircular. Umbones a little posterior to the anterior margin. Surface marked by exceedingly fine, concentric threads only. The character of the hinge is shown in our detailed sketch.

The type and another specimen of this species, Cat. No. 187193, U.S.N.M., come from Port Alfred (Coll. No. 744). The type measures: Altitude, 1.2 mm.; length, 1.5 mm.

No. 251019, U.S.N.M. contains three additional valves of this species from the same place (Coll. No. 1536).

ROCHEFORTIA IO, new species.

Plate 39, fig. 5; plate 53, figs. 5, 6.

Very minute, of irregular cuneate outline. Prodissoconch marked by fine radiating striations. The succeeding portion, which is separated by a slight constriction from the prodissoconch, is marked by numerous, rather strong, concentric threads, which are about as wide as the spaces that separate them. The character of the hinge is shown in our detailed sketch.

The type and two other specimens, Cat. No. 251043, U.S.N.M., come from Port Alfred (Coll. No. 1560). The type measures: Altitude, 0.9 mm.; length, 1.1 mm.

ROCHEFORTIA FARMA, new species.

Plate 48, fig. 2; plate 53, figs. 1, 2.

Small, oval, covered with a very thin yellowish periostracum, the umbones about one-third of the entire length of the shell or to the anterior margin. Surface marked with rather coarse somewhat irregular lines of growth, and numerous, fine, radiating lines which are of varying strength and irregular spacing. The character of the hinge is shown in our detailed figure.

The type and another valve, Cat. No. 249892, U.S.N.M., come from Port Alfred (Coll. No. 1164). The type measures: Altitude, 1.9 mm.; length, 2.5 mm.

Genus LASEA Leach.

LASEA TURTONI, new species.

Plate 42, figs. 9, 10; plate 53, figs. 3, 4.

Irregularly, broadly oval, white, with the early portion and the apical area suffused with rose purple. The umbones are about opposite the

dition in 12 fathoms at the Cape of Good Hope. The larger of the plate 45, figs. 1, 2, measures: Length, 4.2 mm.; altitude, 3 mm.; diameter, 2 mm.

ROCHEFORTIA SIMILIS Smith.

Plate 51, figs. 9, 10.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. 186967, one and one-half specimens (Coll. No. 339); Cat. No. 249 two specimens (Coll. No. 1158); Cat. No. 251052, two valves (Cat. No. 1569).

ROCHEFORTIA NATALENSIS Smith.

Plate 52, figs. 1, 2.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. 186185, one valve (Coll. No. 736); Cat. No. 249890, two specimens (Coll. No. 1162); Cat. No. 249891, two specimens (Coll. No. 1163).

ROCHEFORTIA ENORA, new species.

Plate 45, fig. 5; plate 52, figs. 3, 4.

Shell oval, rather thick, with the umbones almost median. Surface marked by somewhat irregular, slender, closely spaced lines of growth, and weak, very fine, radiating striations. The character of the hinge is shown in the detailed sketch.

The type, Cat. No. 251040, U.S.N.M., comes from Port Alfred (Coll. No. 1557). It measures: Altitude, 3 mm.; length, 3.8 mm.

ROCHEFORTIA ELSA, new species.

Plate 41, fig. 3; plate 52, figs. 5, 6.

Shell broadly oval, minute, very thin, semitranslucent, the umbones being situated at the anterior end. Outer surface marked by numerous, very fine, concentric lines of growth, which appear as very slender threads. No radiating sculpture is apparent. The character of the hinge is shown in our detailed sketch.

The type, Cat. No. 251045, U.S.N.M., comes from Port Alfred (Cat. No. 1562). It measures: Altitude, 1.4 mm.; length, 1.8 mm.

ROCHEFORTIA MILDA, new species.

Plate 47, fig. 6; plate 52, figs. 9, 10.

Shell small, broadly oval, covered by an exceedingly thin periostracum, which lends it an iridescent appearance. Umbones slightly anterior to the middle. The posterior margin slightly truncated; anterior well rounded. Surface marked by numerous very closely spaced, slender, concentric threads, which are a little wider than the spaces that separate them, and numerous very fine radiating lines.

threads, which are best pronounced on the posterior portion of the shell. The character of the hinge is shown in our detailed sketch.

The type and another valve, Cat. No. 249894, U.S.N.M., come from Port Alfred (Coll. No. 1166). The type measures: Altitude, 2.2 mm.; length, 2.5 mm.

ROCHFORTIA HELENA, new species.

Plate 42, figs. 3, 4; plate 47, fig. 2; plate 52, figs. 7, 8.

Shell minute, of somewhat irregular cuneate outline, thin, semi-translucent. Umbones a little posterior to the anterior margin. Outer surface marked by exceedingly fine, concentric threads only. The character of the hinge is shown in our detailed sketch.

The type and another specimen of this species, Cat. No. 187193, U.S.N.M., come from Port Alfred (Coll. No. 744). The type measures: Altitude, 1.2 mm.; length, 1.5 mm.

Cat. No. 251019, U.S.N.M. contains three additional valves of this species from the same place (Coll. No. 1536).

ROCHFORTIA IO, new species.

Plate 39, fig. 5; plate 53, figs. 5, 6.

Shell very minute, of irregular cuneate outline. Prodissoconch marked by fine radiating striations. The succeeding portion, which is separated by a slight constriction from the prodissoconch, is marked by numerous, rather strong, concentric threads, which are about as wide as the spaces that separate them. The character of the hinge is shown in our detailed sketch.

The type and two other specimens, Cat. No. 251043, U.S.N.M., come from Port Alfred (Coll. No. 1560). The type measures: Altitude, 0.9 mm.; length, 1.1 mm.

ROCHFORTIA FARMA, new species.

Plate 48, fig. 2; plate 53, figs. 1, 2.

Shell small, oval, covered with a very thin yellowish periostracum, with the umbones about one-third of the entire length of the shell posterior to the anterior margin. Surface marked with rather coarse and somewhat irregular lines of growth, and numerous, fine, radiating striations which are of varying strength and irregular spacing. The character of the hinge is shown in our detailed figure.

The type and another valve, Cat. No. 249892, U.S.N.M., come from Port Alfred (Coll. No. 1164). The type measures: Altitude, 1.9 mm.; length, 2.5 mm.

Genus LASEA Leach.

LASEA TURTONI, new species.

Plate 42, figs. 9, 10; plate 53, figs. 3, 4.

Shell irregularly, broadly oval, white, with the early portion and the hinge suffused with rose purple. The umbones are about opposite the

dition in 12 fathoms at the Cape of Good Hope. The larger of these, plate 45, figs. 1, 2, measures: Length, 4.2 mm.; altitude, 3 mm.; diameter, 2 mm.

ROCHEFORTIA SIMILIS Smith.

Plate 51, figs. 9, 10.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186967, one and one-half specimens (Coll. No. 339); Cat. No. 249886, two specimens (Coll. No. 1158); Cat. No. 251052, two valves (Coll. No. 1569).

ROCHEFORTIA NATALENSIS Smith.

Plate 52, figs. 1, 2.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186185, one valve (Coll. No. 736); Cat. No. 249890, two specimens (Coll. No. 1162); Cat. No. 249891, two specimens (Coll. No. 1163).

ROCHEFORTIA ENORA, new species.

Plate 45, fig. 5; plate 52, figs. 3, 4.

Shell oval, rather thick, with the umbones almost median. The surface marked by somewhat irregular, slender, closely spaced lines of growth, and weak, very fine, radiating striations. The character of the hinge is shown in the detailed sketch.

The type, Cat. No. 251040, U.S.N.M., comes from Port Alfred (Coll. No. 1557). It measures: Altitude, 3 mm.; length, 3.8 mm.

ROCHEFORTIA ELSA, new species.

Plate 41, fig. 3; plate 52, figs. 5, 6.

Shell broadly oval, minute, very thin, semitranslucent, the umbones being situated at the anterior end. Outer surface marked by numerous, very fine, concentric lines of growth, which appear as very slender threads. No radiating sculpture is apparent. The character of the hinge is shown in our detailed sketch.

The type, Cat. No. 251045, U.S.N.M., comes from Port Alfred (Coll. No. 1562). It measures: Altitude, 1.4 mm.; length, 1.8 mm.

ROCHEFORTIA MILDA, new species.

Plate 47, fig. 6; plate 52, figs. 9, 10.

Shell small, broadly oval, covered by an exceedingly thin periostracum, which lends it an iridescent appearance. Umbones slightly anterior to the middle. The posterior margin slightly truncated; the anterior well rounded. Surface marked by numerous very closely spaced, slender, concentric threads, which are a little wider than the spaces that separate them, and numerous very fine radiating axial

threads, which are best pronounced on the posterior portion of the shell. The character of the hinge is shown in our detailed sketch.

The type and another valve, Cat. No. 249894, U.S.N.M., come from Port Alfred (Coll. No. 1166). The type measures: Altitude, 2.2 mm.; length, 2.5 mm.

ROCHFORTIA HELENA, new species.

Plate 42, figs. 3, 4; plate 47, fig. 2; plate 52, figs. 7, 8.

Shell minute, of somewhat irregular cuneate outline, thin, semi-translucent. Umbones a little posterior to the anterior margin. Outer surface marked by exceedingly fine, concentric threads only. The character of the hinge is shown in our detailed sketch.

The type and another specimen of this species, Cat. No. 187193, U.S.N.M., come from Port Alfred (Coll. No. 744). The type measures: Altitude, 1.2 mm.; length, 1.5 mm.

Cat. No. 251019, U.S.N.M. contains three additional valves of this species from the same place (Coll. No. 1536).

ROCHFORTIA IO, new species.

Plate 39, fig. 5; plate 53, figs. 5, 6.

Shell very minute, of irregular cuneate outline. Prodissoconch marked by fine radiating striations. The succeeding portion, which is separated by a slight constriction from the prodissoconch, is marked by numerous, rather strong, concentric threads, which are about as wide as the spaces that separate them. The character of the hinge is shown in our detailed sketch.

The type and two other specimens, Cat. No. 251043, U.S.N.M., come from Port Alfred (Coll. No. 1560). The type measures: Altitude, 0.9 mm.; length, 1.1 mm.

ROCHFORTIA FARMA, new species.

Plate 48, fig. 2; plate 53, figs. 1, 2.

Shell small, oval, covered with a very thin yellowish periostracum, with the umbones about one-third of the entire length of the shell posterior to the anterior margin. Surface marked with rather coarse and somewhat irregular lines of growth, and numerous, fine, radiating striations which are of varying strength and irregular spacing. The character of the hinge is shown in our detailed figure.

The type and another valve, Cat. No. 249892, U.S.N.M., come from Port Alfred (Coll. No. 1164). The type measures: Altitude, 1.9 mm.; length, 2.5 mm.

Genus LASEA Leach.

LASEA TURTONI, new species.

Plate 42, figs. 9, 10; plate 53, figs. 3, 4.

Shell irregularly, broadly oval, white, with the early portion and the hinge suffused with rose purple. The umbones are about opposite the

middle, but the shell is much more inflated posterior to the umbones than anterior. Outer surface marked with irregularly spaced, rather strong, incremental lines, and exceedingly fine papillations, which lend the surface a shagreened appearance. The character of the hinge is shown in our detailed figure.

The type and two valves, Cat. No. 186968, U.S.N.M., come from Port Alfred (Coll. No. 341). The type measures: Altitude, 3.3 mm.; length, 4.1 mm.

There are four additional lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 249888, three specimens (Coll. No. 1160); Cat. No. 251025, a young valve (Coll. No. 1542); Cat. No. 251042, three specimens (Coll. No. 1559); Cat. No. 251058, one young valve (Coll. No. 1575).

This species is probably what has been reported from South Africa as *Lasea australis* Sowerby. It differs from it in general outline, and in being a much thinner shell of much finer external sculpture. It is likewise smaller, the Australian species being very coarse in every way.

Family KELLIELLIDAE.

Genus ALIGENA H. C. Lea.

ALIGENA OVALIS Smith.

Cat. No. 186959, U.S.N.M., one specimen from Port Alfred (Coll. No. 329).

Family CARDIIDAE.

Genus CARDIUM Lamarck.

CARDIUM TURTONI Sowerby.

Cat. No. 186934, U.S.N.M., two specimens from Port Alfred (Coll. No. 304).

Genus PAPYRIDEA Swainson.

PAPYRIDEA (FULVIA) NATALENSIS Sowerby.

Cat. No. 186935, U.S.N.M., two specimens from Port Alfred (Coll. No. 305). Cat. No. 251003, U.S.N.M., contains a very young valve from the same locality (Coll. No. 1520).

Family VENERIDAE.

Genus DOSINIA Scopoli.

DOSINIA HEPATICA Lamarck.

There are four lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186936, two specimens (Coll. No. 306); Cat. No. 186961a, one valve (Coll. No. 332a); Cat. No. 187178, one valve (Coll. No. 729); Cat. No. 251015, one specimen (Coll. No. 1532).

Genus *TIVELA* Link.*TIVELA COMPRESSA* Sowerby.

Cat. No. 19835, U.S.N.M., one specimen collected by William Stimpson on the North Pacific Exploring Expedition at Simons Bay. Cat. No. 186938, U.S.N.M., three valves from Port Alfred (Coll. No. 308).

TIVELA ALUCINANS Sowerby.

Cat. No. 43179, U.S.N.M., one specimen from the Cape of Good Hope.

Genus *SUNETTA* Link.*SUNETTA OVALIS* Sowerby.

Cat. No. 186940, U.S.N.M., seven valves from Port Alfred (Coll. No. 310).

Genus *CIRCE* Schumacher.*CIRCE ALFREDENSIS*, new species.

Plate 46, figs. 3, 4.

Shell oval, white or pale brown flecked with rust brown. Umbones about one-third of the length of the shell posterior to the anterior margin. Surface marked by strong radiating ribs which increase in strength from the umbones toward the ventral margin. On the posterior and anterior margins they become divaricate. There are 30 of these ribs on the valve. The spaces separating these radiating ribs are a little less in width than the ribs, and are marked with concentric riblets. These riblets extend up on the sides of the ribs but do not seem to cross their summits. The character of the hinge is shown in our detailed sketch.

The type and another valve, Cat. No. 189441, U.S.N.M., come from Port Alfred (Coll. No. 311). The type measures: Altitude, 11.5 mm.; length, 16 mm.

Genus *CHIONE* Mühlfeld.*CHIONE*, species?

Cat. No. 187180, U.S.N.M., two valves, young specimens of a species of this genus, too poor to be specifically determined, from Port Alfred (Coll. No. 731).

Genus *ANOMALOCARDIA* Schumacher.*ANOMALOCARDIA ALFREDENSIS*, new species.

Plate 44, figs. 3, 4.

Shell inflated, heavy, irregularly triangular, flesh colored marked with radiating, zigzag lines of rust brown. Outer surface polished, marked by concentric lines of growth and somewhat crinkly, radiating striations. The character of the hinge is shown in our detailed sketch.

The type and another specimen, Cat. No. 186939, U.S.N.M., come from Port Alfred (Coll. No. 309). The type measures: Altitude, 25 mm.; length, 31 mm.

Cat. No. 251022, U.S.N.M., contains two additional valves from the same locality (Coll. No. 1539).

Genus *ANTIGONA* Schumacher.

ANTIGONA VERRUCOSA Linnaeus.

Cat. No. 98233, U.S.N.M., one specimen from Port Elizabeth. Cat. No. 186937, U.S.N.M., two specimens from Port Alfred (Coll. No. 307).

ANTIGONA (?), species ?

Cat. No. 187194, U.S.N.M., seven valves, from Port Alfred (Coll. No. 745), nepionic shells of this genus too young to be specifically determined with the material at hand.

Genus *PAPHIA* Bolten.

PAPHIA DISRUPTA Sowerby.

The United States National Museum has three lots of this species from the Cape of Good Hope, as follows: Cat. No. 17645, three specimens; Cat. No. 32034, five specimens; Cat. No. 76484, three specimens. In addition to this there are three specimens from Albany, Cat. No. 98048, and three additional lots from Port Alfred, as follows: Cat. No. 186942, one specimen (Coll. No. 312); Cat. No. 251023, one specimen (Coll. No. 1540); Cat. No. 251024, one specimen (Coll. No. 1541).

Genus *VENERUPIS* Lamarck.

VENERUPIS, species ?

The United States National Museum contains two lots of *Venerupis*, which are too poor to be specifically determined, all from Port Alfred, as follows: Cat. No. 187172, one specimen (Coll. No. 721); Cat. No. 251026, one valve (Coll. No. 1543).

Family *PETRICOLIDAE*.

Genus *PETRICOLA* Lamarck.

PETRICOLA PONSONBYI Sowerby.

Cat. No. 32034a, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 98042, U.S.N.M., two specimens from Albany. Cat. No. 186943, U.S.N.M., two specimens from Port Alfred (Coll. No. 313). Cat. No. 187188, U.S.N.M., one specimen from the same locality (Coll. No. 739).

PETRICOLA, species ?

Cat. No. 187182, U.S.N.M., a valve of a specimen too young to be determined positively, from Port Alfred (Coll. No. 733).

Family TELLINIDAE.

Genus TELLINA Linnaeus.

TELLINA VIDAENSIS Sowerby.

Cat. No. 66, U.S.N.M., four specimens collected by William Stimpson on the North Pacific Exploring Expedition in False Bay.

TELLINA ALBINELLA ALFREDENSIS, new subspecies.

Plate 46, figs. 7, 8.

Shell similar in outline and coloration to the rose-colored form of *T. albinella* Lamarck, but differing from it in being much heavier, and in having the angulated posterior dorsal area much narrower, which renders the posterior end of the shell much more pointedly beaked. The radiating sculpture is also much coarser than in *albinella*.

Cat. No. 186948, U.S.N.M., contains the type which comes from Port Alfred (Coll. No. 318). The type measures: Length, 46.8 mm.; altitude, 25.5 mm. Cat. No. 249859, U.S.N.M., contains another valve from the same locality (Coll. No. 1131).

TELLINA NATALENSIS Krauss.

Cat. No. 186949, U.S.N.M., one valve from Port Alfred (Coll. No. 319).

TELLINA PONSONBYI Sowerby.

Three lots of this species are in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186950, two specimens (Coll. No. 320); Cat. No. 249860, three specimens (Coll. No. 1132); Cat. No. 249885, three very young specimens (Coll. No. 1157).

TELLINA TRIANGULARIS Chemnitz.

Cat. No. 98046, U.S.N.M., one specimen from Albany. In addition to this, there are two lots in the collection of the United States National Museum from Port Alfred, as follows: Cat. No. 186951, two specimens (Coll. No. 321); Cat. No. 251031, one very young valve (Coll. No. 1548).

TELLINA REGULARIS Smith.

Cat. No. 186952, U.S.N.M., three specimens from Port Alfred (Coll. No. 322).

TELLINA, species?

Cat. No. 251037, U.S.N.M., is a young valve of a *Tellina* which I am unable to identify, from Port Alfred (Coll. No. 1554).

TELLINA, species?

Cat. No. 251050, U.S.N.M., is a valve from Port Alfred, belonging to the section of rounded-valve *Tellinas* having radiating red bands, which I am unable to identify. On account of its worn condition I refrain from describing it as new (Coll. No. 1367).

Genus METIS H. and A. Adams.

METIS ORBICULARIS Sowerby.

Cat. No. 187170, U.S.N.M., one valve from Port Alfred (Coll. No. 717).

Genus MACOMA Leach.

MACOMA LITTORALIS Krauss.

Cat. No. 186954, U.S.N.M., three and one-half specimens from Port Alfred (Coll. No. 324).

MACOMA AFRICANA Sowerby.

Cat. No. 186955, U.S.N.M., two specimens from Port Alfred (Coll. No. 325). Cat. No. 249862, U.S.N.M., contains two additional specimens from the same locality (Coll. No. 1134).

Family SEMELIDAE.

Genus SEMELE Schumacher.

SEMELE CAPENSIS Smith.

Cat. No. 249861, U.S.N.M., contains six valves of this species, all from Port Alfred (Coll. No. 1133).

Genus ABRA (Leach) Lamarck

ABRA AFRICANA, new species.

Plate 45, fig. 7; plate 49, figs. 8, 9.

Shell small, bluish white, covered by a very thin, yellow periostracum. The umbones fall considerably anterior to the middle. The anterior dorsal margin slopes more abruptly than the posterior dorsal. The ventral is evenly, gently curved. By transmitted light the valves show microscopic, closely spaced, radiating striations and fine lines of growth. The hinge is shown in our detailed figure.

The type, Cat. No. 249863, U.S.N.M., comes from Port Alfred (Coll. No. 1135). It measures: Altitude, 3.7 mm.; length, 5 mm.

Genus THEORA H. and A. Adams.

THEORA ALFREDENSIS, new species.

Plate 45, fig. 8; plate 49, fig. 3.

Shell elongate-oval, polished, thin, semitranslucent. Anterior dorsal margin sloping much more abruptly than the posterior; ventral margin evenly rounded. The entire surface of the shell is marked by exceedingly fine, microscopic, radiating striations, which are best shown by transmitted light, and coarser lines of growth. The hinge is shown in our detailed figure.

The type, Cat. No. 251032, U.S.N.M., comes from Port Alfred (Coll. No. 1549). It measures: Altitude, 5.5 mm.; length, 9.2 mm.

Family PSAMMOBIIDAE.

Genus GASTRANA Schumacher.

GASTRANA ABILDGAARDIANA Spengler.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186947, one specimen (Coll. No. 317); Cat. No. 186958, a very young valve (Coll. No. 328); Cat. No. 249872, four young valves (Coll. No. 1144).

Genus PSAMMOBIA (Lamarck) Bowdich.

PSAMMOBIA BURNUPI Sowerby.

Cat. No. 187169, U.S.N.M., three valves from Port Alfred (Coll. No. 716).

PSAMMOBIA, species?

Cat. No. 187169a, U.S.N.M., contains a valve of a *Psammobia* which I am unable to reconcile with any of the known species from South Africa, but which is too poor to be identified, (Coll. No. 716). It comes from Port Alfred.

Genus PSAMMOTELLINA Fischer.

PSAMMOTELLINA CAPENSIS Sowerby.

Cat. No. 127046, U.S.N.M., three specimens from Port Elizabeth. In addition to these, there are six lots in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186953, one specimen and four valves (Coll. No. 323); Cat. No. 249864, seven specimens (Coll. No. 1136); Cat. No. 249865, one specimen (Coll. No. 1137); Cat. No. 249866, one specimen (Coll. No. 1138); Cat. No. 249867, one valve (Coll. No. 1139); Cat. No. 251055, one valve (Coll. No. 1572).

Family DONACIDAE.

Genus DONAX Linnaeus.

DONAX SERRA Chemnitz.

Cat. No. 84, U.S.N.M., three specimens collected by William Stimpson on the North Pacific Exploring Expedition at the Cape of Good Hope. Cat. No. 76087, U.S.N.M., two valves from the Cape of Good Hope. Cat. No. 97998, U.S.N.M., two specimens from Albany. Cat. No. 98234, U.S.N.M., one specimen from Port Elizabeth. Cat. No. 186956, U.S.N.M., one specimen from Port Alfred (Coll. No. 326).

DONAX BERTINI Pilsbry.

Cat. No. 160860, U.S.N.M., one specimen from South Africa. Cat. No. 251035, U.S.N.M., contains two valves from Port Alfred (Coll. No. 1552).

DONAX SORDIDUS Hanley.

Cat. No. 186957, U.S.N.M., one and one-half specimens from Port Alfred (Coll. No. 327).

DONAX BIPARTITUS Planch.

Cat. No. 160861, U.S.N.M., one specimen from South Africa.

DONAX SIMPLEX Sowerby.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 187176, one specimen (Coll. No. 725); Cat. No. 251027, one valve (Coll. No. 1544); Cat. No. 251034, one specimen and one valve (Coll. No. 1551).

DONAX BURNUPI Sowerby.

Cat. No. 187175, U.S.N.M., one valve from Port Alfred (Coll. No. 724). Cat. No. 251028, U.S.N.M., one valve (Coll. No. 1545). Cat. No. 251036, U.S.N.M., one valve (Coll. No. 1553).

Family SOLENIDAE.

Genus SOLEN Linnaeus.

SOLEN ALFREDENSIS, new species.

Plate 40, figs. 1, 2.

Shell subcylindric, laterally compressed, gaping anteriorly and posteriorly, obliquely truncated anteriorly, well rounded posteriorly. The valves have a very strong constriction immediately posterior to the anterior margin. They are marked with fine lines of growth only.

The type and another specimen, Cat. No. 227816, U.S.N.M., come from Port Alfred (Coll. No. 911). The type measures: Altitude, 15 mm.; length, 96.5 mm.; diameter, 11 mm.

SOLEN CAPENSIS Fischer.

There are three lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 186960, one specimen (Coll. No. 330); Cat. No. 249858, three specimens (Coll. No. 1130); Cat. No. 251021, two young specimens (Coll. No. 1538).

Family MACTRIDAE.

Genus SCHIZODESMA Gray.

SCHIZODESMA SPENGLERI Linnaeus.

Cat. No. 86, U.S.N.M., one specimen collected by William Stimpson on the North Pacific Exploring Expedition at False Bay, Cape of

Good Hope. Cat. No. 17496, U.S.N.M., one specimen from the Cape of Good Hope. Cat. No. 186944, U.S.N.M., one specimen from Port Alfred (Coll. No. 314).

Genus **EASTONIA** Gray.

EASTONIA AFRICANA, new species.

Plate 43, figs. 5, 6.

Shell broadly oval, thin. Umbones about one-third of the length of the shell posterior to the anterior margin. Surface marked by many slender, raised, radiating threads which are less strong on the anterior portion than on the posterior and also much more closely spaced here than on the posterior part, except the extreme posterior portion, on which they are entirely absent. The spaces between these ribs are concaved and marked by very slender, irregular, slanting lines which give this portion of the shell a crinkly appearance. In addition to this sculpture, the whorls are marked by numerous feeble lines of growth.

The type, Cat. No. 186946, U.S.N.M., comes from Port Alfred (Coll. No. 316), and measures: Length, 36 mm.; altitude, 30 mm. This is probably what has been reported as *Standella solandri* Gray, a species occurring in the Moluccas. It differs from that species in being shorter and higher and in having many more ribs.

Genus **MACTRA** Linnaeus.

MACTRA AEQUISULCATA Sowerby.

Cat. No. 128350, U.S.N.M., one specimen from South Africa.

MACTRA ADANSONI Philippi.

There are four lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 187166, two specimens (Coll. No. 713); Cat. No. 187167, one valve (Coll. No. 714); Cat. No. 251016, two additional valves (Coll. No. 1533); Cat. No. 251033, a very young valve (Coll. No. 1550).

MACTRA ALFREDENSIS, new species.

Plate 44, figs. 6, 7

Shell oval, compressed. Anterior dorsal margin passing in an almost straight line from the umbones to the extreme anterior portion, and then curving evenly to the evenly curved base. Posterior dorsal margin more feebly curved. Two radiating raised lines pass obliquely backward from the umbones; the second of these is a little more distant from the first than that is from the dorsal margin. The space inclosed by them is marked by numerous indistinct reticula-

tions. Outer surface of the entire shell marked by rather coarse, concentric lines of growth and numerous, exceedingly fine, white, evenly spaced, radiating striations.

Cat. No. 186945, U.S.N.M., contains four valves of this species from Port Alfred (Coll. No. 315). The one selected as type is not quite a mature specimen, measuring: Length, 41 mm.; altitude, 29 mm.

Genus *LUTRARIA* Lamarck.

LUTRARIA CAPENSIS Deshayes.

There are three lots of this species in the collection of the United States National Museum, from Port Alfred, as follows: Cat. No. 187168, two specimens (Coll. No. 715); Cat. No. 249873, one valve (Coll. No. 1145); Cat. No. 251030, another valve (Coll. No. 1547).

Family *SAXICAVIDAE*.

Genus *SAXICAVA* Bellevue.

SAXICAVA ARENACEA Smith.

There are eight lots of this species in the collection of the United States National Museum, all from Port Alfred, as follows: Cat. No. 187179, one specimen and four valves (Coll. No. 730); Cat. No. 249874, five valves (Coll. No. 1146); Cat. No. 249875, seven valves (Coll. No. 1147); Cat. No. 249876, four young specimens (Coll. No. 1148); Cat. No. 249879, two young specimens (Coll. No. 1151); Cat. No. 251046, one valve (Coll. No. 1563); Cat. No. 251054, one valve (Coll. No. 1571); Cat. No. 251057, two valves (Coll. No. 1574).

SAXICAVA LIRATA Smith.

Cat. No. 251053, U.S.N.M., one specimen from Port Alfred (Coll. No. 1570).

Family *GASTROCHAENIDAE*.

Genus *GASTROCHAENA* Spengler.

GASTROCHAENA, species ?

Cat. No. 249871, U.S.N.M., contains one worn valve belonging to this genus, from Port Alfred (Coll. No. 1143). It is too poor to be properly identified.

Family *PHOLADIDAE*.

Genus *PHOLAS* Linnaeus.

PHOLAS ALFREDENSIS, new species.

Plate 44, figs. 1, 2.

Shell elongate-ovate, decidedly beaked anteriorly, marked by numerous very closely spaced, low lamellae and fine radiating riblets

which are closely spaced at the anterior end, becoming gradually more diffused posterior to the umbones. The junction of the radiating riblets with the lamellae, form slender cusps. Dorsal callus thick, strong, and decidedly reflected.

The type and two valves of this species (Cat. No. 186965, U.S.N.M., come from Port Alfred (Coll. No. 337). The type measures: Length, 41 mm.; altitude, 12 mm. Another specimen, Cat. No. 187177, U.S.N.M., comes from the same place (Coll. No. 728). This specimen is much stouter than the other, measuring: Length, 35 mm.; altitude, 17 mm.

This is the species which has been listed from South Africa as *Pholas fragilis* Sowerby, which is a Philippine shell coming from Bassy, Samar Island. I have material from the type-locality and find that this species differs from the present in being much thinner and much more strongly and distinctly sculptured, and altogether more elegant.

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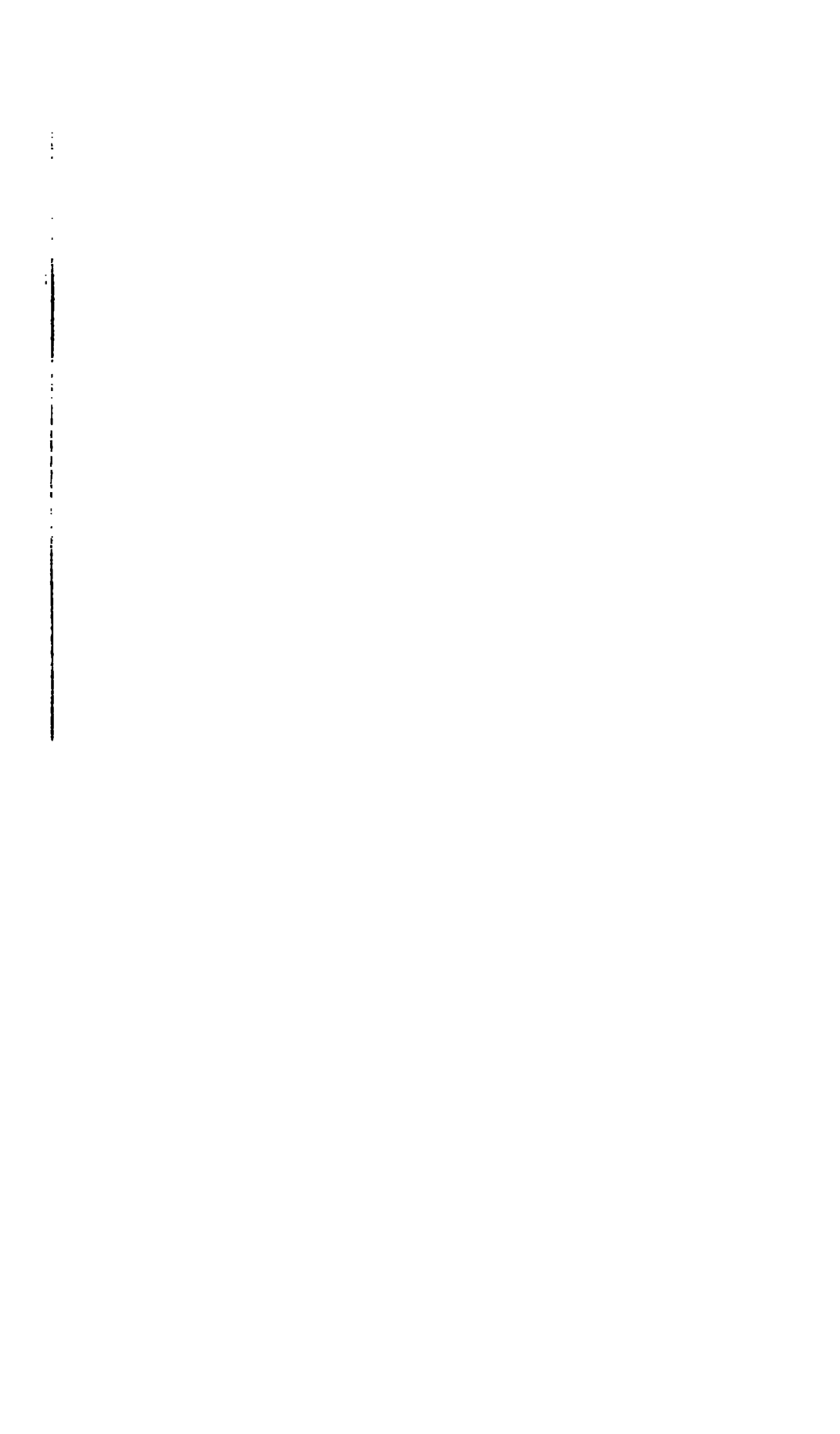
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LIST OF SPECIES COLLECTED BY LIEUT. COL. TURTON AT PORT
ALFRED, SOUTH AFRICA.

- | | |
|--|---|
| 1. <i>Argonauta argo</i> Linnaeus. | 45. <i>Conus caffer</i> Krauss. |
| 2. <i>Spirula peronii</i> Lamarck. | 46. <i>Conus guttatus</i> Kiener. |
| 3. <i>Cavolina longirostris</i> Lesueur. | 47. <i>Conus pictus</i> Reeve. |
| 4. <i>Cavolina globulosa</i> Rang. | 48. <i>Conus infrenatus</i> Reeve. |
| 5. <i>Styliola africana</i> Bartsch. | 49. <i>Conus bairstowi</i> Sowerby. |
| 6. <i>Actaeon albus</i> Sowerby. | 50. <i>Conus</i> , species? |
| 7. <i>Bullina scabra</i> Gmelin. | 51. <i>Chionella kraussi</i> Smith. |
| 8. <i>Acteocina smithi</i> Bartsch. | 52. <i>Chionella bipartita</i> Smith. |
| 9. <i>Acteocina</i> , species? | 53. <i>Chionella subventricosa</i> Smith. |
| 10. <i>Retusa truncatula</i> Bruguiere. | 54. <i>Chionella confusa</i> Smith. |
| 11. <i>Volvula</i> , species? | 55. <i>Chionella rosaria</i> Reeve. |
| 12. <i>Cylichna africana</i> Bartsch. | 56. <i>Chionella sybaritica</i> Bartsch. |
| 13. <i>Cylichna tubulosa</i> Gould. | 57. <i>Chionella nereia</i> Bartsch. |
| 14. <i>Bullaria ampulla</i> Linnaeus. | 58. <i>Chionella turtoni</i> Bartsch. |
| 15. <i>Bullaria</i> , species? | 59. <i>Chionella</i> , species? |
| 16. <i>Haminea alfredensis</i> Bartsch. | 60. <i>Chionella bornii</i> Smith. |
| 17. <i>Ringicula turtoni</i> Bartsch. | 61. <i>Chionella?</i> <i>platystoma</i> Smith. |
| 18. <i>Ringicula africana</i> Bartsch. | 62. <i>Chionella</i> , species? |
| 19. <i>Hydatina physis</i> Linnaeus. | 63. <i>Turris fulloni</i> Sowerby. |
| 20. <i>Cylindrobulla turtoni</i> Bartsch. | 64. <i>Clavatula tazus</i> Kiener. |
| 21. <i>Volvatella laguncula</i> Sowerby. | 65. <i>Clavatula hakiplex</i> Bartsch. |
| 22. <i>Tethys maculata</i> Rang. | 66. <i>Clavatula haliastrepta</i> Bartsch. |
| 23. <i>Tethys concava</i> Sowerby. | 67. <i>Clavatula helena</i> Bartsch. |
| 24. <i>Tethys</i> , species? | 68. <i>Clavatula</i> , species? |
| 25. <i>Philine capensis</i> Bergh. | 69. <i>Drillia rousi</i> Sowerby. |
| 26. <i>Oxynotus natalensis</i> Smith. | 70. <i>Drillia caffra</i> Smith. |
| 27. <i>Melampus acinoides</i> Morelet. | 71. <i>Drillia signa</i> Bartsch. |
| 28. <i>Melampus</i> , species? | 72. <i>Drillia layardi</i> Sowerby. |
| 29. <i>Microtrahia</i> , species? | 73. <i>Drillia diversa</i> Smith. |
| 30. <i>Siphonaria concinna</i> Sowerby. | 74. <i>Drillia bairstowi</i> Sowerby. |
| 31. <i>Siphonaria capensis</i> Quoy and Gaimard. | 75. <i>Drillia hottentota</i> Smith. |
| 32. <i>Siphonaria capensis lineolata</i> Krauss. | 76. <i>Drillia albonodulosa</i> Smith. |
| 33. <i>Siphonaria aspera</i> Krauss. | 77. <i>Drillia thetis</i> Smith. |
| 34. <i>Gadinia costata</i> Krauss. | 78. <i>Drillia nivosa</i> Smith. |
| 35. <i>Ampullarina africana</i> Smith. | 79. <i>Drillia subcontracta</i> Smith. |
| 36. <i>Terebra capensis</i> Smith. | 80. <i>Drillia praetermissa</i> Smith. |
| 37. <i>Terebra suspensa</i> Smith. | 81. <i>Drillia lara</i> Bartsch. |
| 38. <i>Terebra apicistincta</i> Sowerby. | 82. <i>Mangilia capensis</i> Smith. |
| 39. <i>Terebra</i> , species? | 83. <i>Mangilia dina</i> Bartsch. |
| 40. <i>Conus</i> , species? | 84. <i>Mangilia verrucosa</i> Sowerby. |
| 41. <i>Conus rosaceus</i> Chemnitz. | 85. <i>Mangilia gisa</i> Bartsch. |
| 42. <i>Conus aurora</i> Sowerby. | 86. <i>Mangilia consanguinea</i> Sowerby. |
| 43. <i>Conus lavenderus</i> Bartsch. | 87. <i>Mangilia naga</i> Bartsch. |
| 44. <i>Conus alfredensis</i> Bartsch. | 88. <i>Mangilia helga</i> Bartsch. |
| | 89. <i>Mangilia?</i> <i>crassistrata</i> Smith. |

90. *Mangilia eucosmia* Bartsch.
91. *Mangilia herilda* Bartsch.
92. *Mangilia*, species?
93. *Mangilia grayi* Reeve.
94. *Mangilia nympha* Bartsch.
95. *Mangilia*, species?
96. *Mangilia amplexa* Gould.
97. *Mangilia humerosa* Bartsch.
98. *Mangilia ponsonbyi* Sowerby.
99. *Mangilia*, species?
100. *Mangilia siren* Smith.
101. *Cythara alfredensis* Smith.
102. *Cythara ima* Bartsch.
103. *Daphnella?* *sulcata* Sowerby.
104. *Daphnella alfredensis* Bartsch.
105. *Cancellaria foveolata* Sowerby.
106. *Cancellaria semidisjuncta* Sowerby.
107. *Eburna papillaris* Sowerby.
108. *Ancilla obtusa* Swainson.
109. *Ancilla reevei* Smith.
110. *Ancilla albozonata* Smith.
111. *Ancilla obesa* Sowerby.
112. *Ancilla fasciata* Reeve.
113. *Ancilla marmorata* Reeve.
114. *Ancilla pura* Sowerby.
115. *Ancilla bulloides* Reeve.
116. *Ancilla osculata* Sowerby.
117. *Ancilla*, species?
118. *Sylvanochlea ancilla* Sowerby.
119. *Sylvanochlea*, species?
120. *Marginella pyrum* Gronovius.
121. *Marginella rosea* Lamarck.
122. *Marginella mosaica* Sowerby.
123. *Marginella ornata* Redfield.
124. *Marginella*, species?
125. *Marginella lineolata* Sowerby.
126. *Marginella piperita* Hinds.
127. *Marginella albocincta* Sowerby.
128. *Marginella bairstowi* Sowerby.
129. *Marginella punctilineata* Smith.
130. *Marginella keenii* Marrat.
131. *Marginella eucosmia* Bartsch.
132. *Marginella*, species?
133. *Marginella cosmia* Bartsch.
134. *Marginella*, species?
135. *Marginella munda* Smith.
136. *Marginella zonata* Kiener.
137. *Marginella bilineata* Krauss.
138. *Marginella neglecta* Sowerby.
139. *Marginella turtoni* Bartsch.
140. *Marginella cleo* Bartsch.
141. *Marginella cylindrica* Sowerby.
142. *Marginella fallax* Smith.
143. *Marginella lepta* Bartsch.
144. *Marginella dulcis* Smith.
145. *Marginella burnupi* Sowerby.
146. *Marginella differens* Smith.
147. *Marginella alfredensis* Bartsch.
148. *Marginella algoensis* Smith.
149. *Marginella almo* Bartsch.
150. *Marginella zeyheri* Krauss.
151. *Marginella*, species?
152. *Voluta africana* Reeve.
153. *Voluta* (*Callipara*) *bullata* Swainson.
154. *Xancus truncatus* Sowerby.
155. *Mitra bathyraphe* Sowerby.
156. *Mitra canaliculata* Sowerby.
157. *Mitra capensis* Dunker.
158. *Mitra ima* Bartsch.
159. *Mitra euzonata* Sowerby.
160. *Mitra kowiensis* Sowerby.
161. *Mitra latruncularia* Reeve.
162. *Mitra merula* Sowerby.
163. *Mitra*, species?
164. *Mitra patula* Reeve.
165. *Mitra picta* Reeve.
166. *Mitromorpha volva* Sowerby.
167. *Fasciolaria heyneimanni* Dunker.
168. *Fasciolaria alfredensis* Bartsch.
169. *Fasciolaria*, species?
170. *Latirus rousi* Sowerby.
171. *Latirus bairstowi* Sowerby.
172. *Fusinus ocelliferus* Born.
173. *Fusinus cingulatus* Smith.
174. *Cominella tigrina* Kiener.
175. *Cominella porcata* Gmelin.
176. *Cominella papyracea* Bruguiere.
177. *Cominella lagenaria* Lamarck.
178. *Cominella elongata* Dunker.
179. *Cominella alfredensis* Bartsch.
180. *Cominella unifasciata* Sowerby.
181. *Cominella puncturata* Sowerby.
182. *Cominella angusta* Sowerby.
183. *Cominella*, species?
184. *Tritonidea inculpta* Sowerby.
185. *Euthria ponsonbyi* Sowerby.
186. *Euthria fuscotincta* Sowerby.
187. *Euthria turtoni* Bartsch.
188. *Colubraria alfredensis* Bartsch.
189. *Alectrion capensis* Dunker.
190. *Alectrion crawfordi* Sowerby.
191. *Alectrion kochiana* Dunker.
192. *Alectrion quantula* Gould.
193. *Alectrion cerotina* A. Adams.
194. *Alectrion plicosa* Dunker.
195. *Alectrion pyramidalis* A. Adams.
196. *Alectrion kraussiana* Dunker.
197. *Desmoulea retusa* Lamarck.

- Desmoulea abbreviata* Gmelin.
Bullia annulata Lamarck.
Bullia trifasciata Smith.
Bullia aepynota Bartsch.
Bullia lara Bartsch.
Bullia tenuis Reeve.
Bullia alfredensis Bartsch.
Bullia almo Bartsch.
Bullia callosa Wood.
Bullia, species?
Bullia pura Melvill.
Bullia diluta Krauss.
Bullia, species?
Bullia digitalis Meuschen.
Bullia rhodostoma Gray.
Bullia, species?
Bullia laevis Gmelin.
Columbella (Seminella) lightfooti Smith.
Columbella (Seminella) capensis Smith.
Columbella (Seminella) alfredensis Bartsch.
Columbella (Seminella), species?
Columbella (Anachis) beckeri Sowerby.
Columbella (Anachis) algoensis Sowerby.
Columbella (Anachis) kraussi Sowerby.
Columbella (Anachis) io Bartsch.
Columbella (Anachis), species?
Columbella (Anachis), species?
Columbella (Alia) pyramidalis Sowerby.
Columbella (Alia) adjacens Smith.
Columbella (Alia) albuginosa Reeve.
Columbella (Alia) apicata Smith.
Columbella (Alia), species?
Columbella (Alia), species?
Alcira elegans H. Adams.
Alcira, species?
Alcira, species?
Murex uncinarius Lamarck.
Murex alfredensis Bartsch.
Trophon kowensis Sowerby.
Trophon insignis Sowerby.
Trophon, species?
Trophon, species?
Tritonakia crawfordi Sowerby.
Tritonakia kieneri Reeve.
Tritonakia babbingtoni Sowerby.
Thais capensis Petit.
Thais texturata Smith.
Thais castanea Kuster.
246. *Thais cataracta* Chemnitz.
 247. *Thais squamosa* Lamarck.
 248. *Latiaris rosaceus* Smith.
 249. *Coralliophila rubrococcinea* Melvill and Standen.
 250. *Melapium bulbosum* Wood.
 251. *Epitonium africanum* Bartsch.
 252. *Epitonium tenebrosus* Sowerby.
 253. *Epitonium durbanense* Smith.
 254. *Epitonium lacteum* Krauss.
 255. *Epitonium aglaia* Bartsch.
 256. *Epitonium*, species?
 257. *Acrilla thalia* Bartsch.
 258. *Graphis africana* Bartsch.
 259. *Janthina communis* Lamarck.
 260. *Janthina globosa* Swainson.
 261. *Janthina trochoidea* Reeve.
 262. *Janthina exigua* Lamarck.
 263. *Janthina fragilis* Lamarck.
 264. *Melanella dilecta* Smith.
 265. *Melanella algoensis* Smith.
 266. *Melanella simplex* Sowerby.
 267. *Melanella carifa* Bartsch.
 268. *Melanella icafra* Bartsch.
 269. *Melanella alfredensis* Bartsch.
 270. *Melanella iota* Bartsch.
 271. *Melanella distincta* Smith.
 272. *Melanella langleyi* Sowerby.
 273. *Melanella farica* Bartsch.
 274. *Melanella icafra* Bartsch.
 275. *Melanella asser* Bartsch.
 276. *Melanella*, species?
 277. *Melanella acrifia* Bartsch.
 278. *Melanella*, species?
 279. *Melanella cijara* Bartsch.
 280. *Melanella irafca* Bartsch.
 281. *Subeulima magnifica* Bartsch.
 282. *Niso balteata* Sowerby.
 283. *Niso alfredensis* Bartsch.
 284. *Pyramidella (Orinella) africana*, Bartsch.
 285. *Pyramidella (Orinella) alfredensis* Bartsch.
 286. *Pyramidella (Orinella) ima* Bartsch.
 287. *Pyramidella (Actaeopyramis) norna* Bartsch.
 288. *Pyramidella (Syrnola) capensis* Sowerby.
 289. *Pyramidella (Syrnola) pyrrha* Bartsch.
 290. *Pyramidella (Syrnola) aganea* Bartsch.
 291. *Pyramidella (Syrnola) minor* Smith.
 292. *Pyramidella (Syrnola)*, species?
 293. *Pyramidella (Syrnola) tarpeia* Bartsch.
 294. *Pyramidella (Syrnola) hera* Bartsch.

295. *Turbonilla* (*Ptycheulimella*) *erna* Bartsch.
 296. *Turbonilla* (*Chemnitzia*) *gemmula* Smith.
 297. *Turbonilla* (*Chemnitzia*) *kraussi* Clessin.
 298. *Turbonilla* (*Paelliogyra*) *adaba* Bartsch.
 299. *Turbonilla* (*Strioturbinilla*) *secura* Bartsch.
 300. *Turbonilla* (*Strioturbinilla*) *laevocostata* Sowerby.
 301. *Turbonilla* (*Pyrgolampros*) *angea* Bartsch.
 302. *Turbonilla* (*Pyrgiscus*) *helenae* Bartsch.
 303. *Turbonilla* (*Pyrgiscus*) *atossa* Bartsch.
 304. *Turbonilla* (*Pyrgiscus*), species?
 305. *Turbonilla* (*Pyrgiscus*), species?
 306. *Turbonilla* (*Pyrgiscus*) *tritonia* Bartsch.
 307. *Turbonilla* (*Pyrgiscus*) *zenobia* Bartsch.
 308. *Turbonilla* (*Pyrgiscus*) *tincta* Sowerby.
 309. *Turbonilla* (*Pyrgiscus*) *maia* Bartsch.
 310. *Turbonilla* (*Pyrgiscus*) *tefuna* Bartsch.
 311. *Turbonilla* (*Pyrgiscus*) *apsa* Bartsch.
 312. *Turbonilla* (*Pyrgiscus*), species?
 313. *Turbonilla* (*Dunkeria*) *tegulata* Sowerby.
 314. *Turbonilla* (*Cingulina*) *trachealis* Gould.
 315. *Turbonilla* (*Cingulina*) *uglaia* Bartsch.
 316. *Turbonilla* (*Cingulina*) *pellucida* Sowerby.
 317. *Turbonilla* (*Cingulina*) *callista* Bartsch.
 318. *Turbonilla* (*Careliopsis*) *carifa* Bartsch.
 319. *Turbonilla* (*Mormula*) *cifara* Bartsch.
 320. *Turbonilla* (*Mormula*) *decora* Smith.
 321. *Turbonilla* (*Peristichia*) *bathyrhapha* Sowerby.
 322. *Odostomia* (*Odostomella*) *farica* Bartsch.
 323. *Odostomia* (*Egitina*) *turtoni* Bartsch.
 324. *Odostomia* (*Pyrgulina*) *arfica* Bartsch.
 325. *Odostomia* (*Miranda*) *aguna* Bartsch.
 326. *Odostomia* (*Menestho*) *carifa* Bartsch.
 327. *Odostomia* (*Menestho*) *rifara* Bartsch.
 328. *Odostomia* (*Menestho*) *ficara* Bartsch.
 329. *Odostomia* (*Evalea*) *lucida* Sowerby.
 330. *Odostomia* (*Evalea*) *lavertinae* Smith.
 331. *Odostomia* (*Evalea*) *aethra* Bartsch.
 332. *Odostomia* (*Evalea*) *gea* Bartsch.
 333. *Odostomia* (*Evalea*) *cifara* Bartsch.
 334. *Odostomia* (*Evalea*) *acrifra* Bartsch.
 335. *Odostomia* (*Odostomia*) *irafra* Bartsch.
 336. *Odostomia* (*Odostomia*) *icafra* Bartsch.
 337. *Atlanta* *peronii* Lesueur.
 338. *Bursa* (*Marsupina*), species?
 339. *Bursa* (*Marsupina*), species?
 340. *Eugyrina* *gemmifera* Euthymie.
 341. *Eugyrina* *gemmifera* *lepta* Bartsch.
 342. *Argobuccinum* *argus* Gmelin.
 343. *Cymatium* *doliarium* Lamarck.
 344. *Cymatium* *olearium* Linnaeus.
 345. *Cymatium* *africanum* A. Adams.
 346. *Cymatium* *heleni* Sowerby.
 347. *Nyctilochus* *alfredensis* Bartsch.
 348. *Nyctilochus*, species?
 349. *Aspelia* *anceps* Lamarck?
 350. *Cassia* *achatina* Lamarck.
 351. *Cassia* *zealanica* Lamarck.
 352. *Dolium* *dunkeri* Hanley.
 353. *Amphiperas* *beckeri* Smith.
 354. *Amphiperas* *smithi* Bartsch.
 355. *Cypraea* *cupensis* Lamarck.
 356. *Cypraea* *similis* Gray.
 357. *Cypraea* *vitellus* Linnaeus.
 358. *Cypraea*, species?
 359. *Cypraea* *edentula* Gray.
 360. *Cypraea* *citrina* Gray.
 361. *Cypraea* *algeensis* Gray.
 362. *Cypraea* *ovula* Lamarck.
 363. *Cypraea* *fimbriata* Gmelin.
 364. *Trivia* *oniscus* Lamarck.
 365. *Trivia* *formosa* Gaskoin.
 366. *Trivia* *vesicularis* Gaskoin.
 367. *Trivia* *pellucidula* Gaskoin.
 368. *Triphoria* *atea* Bartsch.
 369. *Triphoria* *convexa* Smith.
 370. *Triphoria*, species?
 371. *Triphoria* *helenae* Bartsch.
 372. *Triphoria* *fuscocomaculata* Smith.
 373. *Triphoria* *smithi* Bartsch.
 374. *Triphoria* *elae* Bartsch.
 375. *Triphoria* *shepatonensis* Smith.
 376. *Triphoria* *milda* Bartsch.
 377. *Triphoria* *ureada* Bartsch.
 378. *Triphoria*, species?
 379. *Triphoria* *africana* Bartsch.
 380. *Triphoria* *cupensis* Bartsch.
 381. *Triphoria* *madria* Bartsch.
 382. *Triphoria*, species?

383. *Triphoris sabita* Bartsch.
 384. *Triphoris*, species?
 385. *Triphoris fuscus* Smith.
 386. *Triphoris cerea* Smith.
 387. *Triphoris nina* Bartsch.
 388. *Triphoris ima* Bartsch.
 389. *Cerithiopsis* (*Cerithiopsis*) *alfredensis* Bartsch.
 390. *Cerithiopsis* (*Cerithiopsis*) *exquisita* Sowerby.
 391. *Cerithiopsis* *erna* Bartsch.
 392. *Cerithiopsis* (*Cerithiopsis*) *nina* Bartsch.
 393. *Cerithiopsis* (*Cerithiopsis*) *nisaba* Bartsch.
 394. *Cerithiopsis*, species?
 395. *Cerithiopsis* (*Cerithiopsis*) *saba* Bartsch.
 396. *Cerithiopsis*, species?
 397. *Seila alfredensis* Bartsch.
 398. *Seila africana* Bartsch.
 399. *Seila smithi* Bartsch.
 400. *Eumeta bia* Bartsch.
 401. *Cerithium contractum* Sowerby.
 402. *Cerithium vulgatum* Linnaeus.
 403. *Cerithium crassilabrum* Krauss.
 404. *Caecum glabratum* Montagu.
 405. *Vermicularia*, species?
 406. *Vermicularia*, species?
 407. *Siliquaria* (*Pyzipoma*) *weldi* Tenison-Woods.
 408. *Siliquaria*, species?
 409. *Turritella puncticulata* Sowerby.
 410. *Turritella carinifera* Lamarck.
 411. *Turritella annulata* Kiener.
 412. *Turritella kowiensis* Sowerby.
 413. *Turritella*, species?
 414. *Turritella*, species?
 415. *Littorina africana* Philippi.
 416. *Littorina africana tryphena* Bartsch.
 417. *Littorina knysnaensis* Krauss.
 418. *Littorina ahenea* Reeve.
 419. *Cithna africana* Bartsch.
 420. *Alaba pinnae* Krauss.
 421. *Alabina alfredensis* Bartsch.
 422. *Alabina africana* Bartsch.
 423. *Diala infrasulcata* Sowerby.
 424. *Diala africana* Bartsch.
 425. *Diala dubia* Sowerby.
 426. *Diala capensis* Bartsch.
 427. *Diala almo* Bartsch.
 428. *Helicacus africanus* Bartsch.
 429. *Helicacus*, species?
 430. *Nodulus perspectus* Smith.
 431. *Nodulus africanus* Bartsch.
 432. *Sabanaea pyrrha* Bartsch.
 433. *Sabanaea thalia* Bartsch.
 434. *Amphithalamus turtoni* Bartsch.
 435. *Amphithalamus africanus* Bartsch.
 436. *Alvania nemo* Bartsch.
 437. *Alvania farquhari* Smith.
 438. *Alvania alfredensis* Bartsch.
 439. *Alvania almo* Bartsch.
 440. *Alvania argentea* Sowerby.
 441. *Alvania fenestrata* Krauss.
 442. *Alvania ima* Bartsch.
 443. *Rissoina alfredi* Smith.
 444. *Rissoina cilia* Bartsch.
 445. *Rissoina*, species?
 446. *Rissoina eucosmia* Bartsch.
 447. *Rissoina*, species?
 448. *Microsetia conspecta* Smith.
 449. *Microsetia gina* Bartsch.
 450. *Microsetia halia* Bartsch.
 451. *Microsetia helga* Bartsch.
 452. *Microsetia irma* Bartsch.
 453. *Barlecia smithi* Bartsch.
 454. *Fenella almo* Bartsch.
 455. *Jeffreysia caffra* Sowerby.
 456. *Jeffreysia capensis* Sowerby.
 457. *Assiminea orata* Krauss.
 458. *Assiminea umlaasiana* Smith.
 459. *Assiminea capensis* Bartsch.
 460. *Assiminea fasciata* Krauss.
 461. *Assiminea*, species?
 462. *Trochita heliconidea* Sowerby.
 463. *Trochita sinensis* Linnaeus.
 464. *Crepidula aculeata* Gmelin.
 465. *Crepidula hepatica* Deshayes.
 466. *Crepidula hepatica complanata* Krauss.
 467. *Crepidula lentiginosa* Sowerby.
 468. *Lamellaria perspicua*, Linnaeus.
 469. *Natica imperforata* Gray.
 470. *Natica alfredensis* Bartsch.
 471. *Natica forata* Reeve.
 472. *Natica africana* Bartsch.
 473. *Natica napus* Smith.
 474. *Natica decipiens* Smith.
 475. *Natica*, species?
 476. *Natica nemo* Bartsch.
 477. *Natica*, species?
 478. *Vanikoro africana* Bartsch.
 479. *Acmaea roseoradiata* Smith.
 480. *Patella granatina* Linnaeus.
 481. *Patella longicosta* Lamarck.

482. *Patella oculus* Reeve.
483. *Patella granularis* Linnaeus.
484. *Patella barbara* Linnaeus.
485. *Patella conspicua* Philippi.
486. *Patella argenvillei* Krauss.
487. *Patella variabilis* Krauss.
488. *Patella compressa* Lamarck.
489. *Patella miniata* Born.
490. *Patella cochlear* Born.
491. *Patella capensis* Dunker.
492. *Patella dunkeri* Krauss.
493. *Patella pruinosa* Krauss.
494. *Helcion pectinatus* Linnaeus.
495. *Phasianella kochii* Philippi.
496. *Phasianella elongata* Krauss.
497. *Phasianella africana* Bartsch.
498. *Phasianella bicarinata* Dunker.
499. *Turbo sarmaticus* Linnaeus.
500. *Turbo cidaris* Gmelin.
501. *Turbo natalensis* Krauss.
502. *Astraea tayloriana* Smith.
503. *Leptothyra africana* Bartsch.
504. *Leptothyra quantilla* Gould.
505. *Leptothyra carminea* Bartsch.
506. *Leptothyra alfredensis* Bartsch.
507. *Clanculus miniatus* Anton.
508. *Clanculus alfredensis* Bartsch.
509. *Clanculus waltonae* Sowerby.
510. *Oxystele merula* Lamarck.
511. *Oxystele tigrina* Chemnitz.
512. *Oxystele sagittifera* Lamarck.
513. *Oxystele tabularis* Krauss.
514. *Gibbula articulata* Gould.
515. *Gibbula fucata* Gould.
516. *Gibbula cicer* Menke.
517. *Gibbula gaudiosa* Gould.
518. *Gibbula thalia* Bartsch.
519. *Gibbula multicolor* Krauss.
520. *Gibbula benzi* Krauss.
521. *Gibbula tryoni* Pilsbry.
522. *Gibbula zonata* Wood.
523. *Gibbula rifaca* Bartsch.
524. *Solariella fuscomaculata* Smith.
525. *Solariella*, species?
526. *Calliostoma eucosmia* Bartsch.
527. *Calliostoma africana* Bartsch.
528. *Euchelus natalensis* Smith.
529. *Cynisca forticostata* Smith.
530. *Cynisca gloriosa* Bartsch.
531. *Cynisca alfredensis* Bartsch.
532. *Cynisca africana* Bartsch.
533. *Teinostoma africana* Smith.
534. *Teinostoma alfredensis* Bartsch.
535. *Ilaira fulgens* Gould.
536. *Lippistes grayi* Adams.
537. *Vitrinella rifaca* Bartsch.
538. *Vitrinella cifara* Bartsch.
539. *Vitrinella ficara* Bartsch.
540. *Vitrinella facira* Bartsch.
541. *Vitrinella (Docomphala) arifca* Bartsch.
542. *Cyclostrema alfredensis* Bartsch.
543. *Cyclostremella farica* Bartsch.
544. *Cyclostremella africana* Bartsch.
545. *Caporbis africana* Bartsch.
546. *Pondorbis alfredensis* Bartsch.
547. *Discopsis planulata* Sowerby.
548. *Discopsis alfredensis* Bartsch.
549. *Discopsis africana* Bartsch.
550. *Discopsis turtoni* Bartsch.
551. *Leptogyra africana* Bartsch.
552. *Nerita albicilla* Linnaeus.
553. *Neritina*, species?
554. Nepionic shell.
555. *Haliotis midae* Linnaeus.
556. *Haliotis sanguinea* Hanley.
557. *Haliotis parva* Linnaeus.
558. *Haliotis alfredensis* Bartsch.
559. *Scissurella jucunda* Smith.
560. *Schismope insignis* Smith.
561. *Fissurella natalensis* Krauss.
562. *Fissurella mutabilis* Sowerby.
563. *Pupillaea aperta* Sowerby.
564. *Fissuridea elizabethae* Smith.
565. *Fissuridea spreta* Smith.
566. *Fissuridea elevata* Dunker.
567. *Fissuridea calyculata* Sowerby.
568. *Fissuridea australis* Krauss.
569. *Fissuridea parvifurcata* Smith.
570. *Puncturella africana* Bartsch.
571. *Collochiton castaneus* Wood.
572. *Ichnochiton cranfordi* Sykes.
573. *Ichnochiton oniscus* Krauss.
574. *Ichnochiton tigrinus* Krauss.
575. *Dinoplax gigas* Gmelin.
576. *Dinoplax gigas alfredensis* Bartsch.
577. *Dinoplax fossus* Sykes.
578. *Acanthochites garnoti* Blainville.
579. *Acanthochites carpenteri* Pilsbry.
580. *Chiton tulipa* Quoy and Gaimard.
581. *Chiton*, species?
582. *Dentalium exasperatum* Sowerby.
583. *Dentalium regulare* Smith.
584. *Dentalium*, species?
585. *Nucula sculpturata* Sowerby.
586. *Nucula nucleus* Linnaeus?
587. *Limopsis pumilis* Smith.
588. *Glycymeris queketti* Sowerby.
589. *Arca acuminata* Krauss.

590. *Fossularca gibba* Krauss.
 591. *Fossularca gradata* Broderip and Sowerby.
 592. *Barbatia alfredensis* Bartsch.
 593. *Barbatia*, species?
 594. *Barbatia cafrica* Bartsch.
 595. *Pinna squamifera* Sowerby.
 596. *Atrina alfredensis* Bartsch.
 597. *Atrina afra* Sowerby (?).
 598. *Hochstetteria limoides* Smith.
 599. *Hochstetteria vilaini* Smith.
 600. *Hochstetteria alfredensis* Bartsch.
 601. *Hochstetteria paramoea* Bartsch.
 602. *Philobrya africana* Bartsch.
 603. *Margaritiphora capensis* Sowerby.
 604. *Ostrea algoensis* Sowerby.
 605. *Pecten natalensis* Smith.
 606. *Pecten sulcicostatus* Sowerby.
 607. *Plicatula squamosissima* Smith.
 608. *Lima perfecta* Smith.
 609. *Lima rotundata* Sowerby.
 610. *Lima africana* Bartsch.
 611. *Lima*, species?
 612. *Anomia ephippium* Linnaeus.
 613. *Anomia patelliformis* Linnaeus.
 614. *Mytilus meridionalis* Krauss.
 615. *Mytilus perna* Linnaeus.
 616. *Mytilus perna trigonia* Krauss.
 617. *Mytilus variabilis* Krauss.
 618. *Mytilus variabilis striata* Krauss.
 619. *Modiola tenerima* Smith.
 620. *Modiola capensis* Krauss.
 621. *Modiola auriculata* Krauss.
 622. *Modiola lignea* Reeve.
 623. *Crenella striatissima* Sowerby.
 624. *Crenella alfredensis* Bartsch.
 625. *Modiolaria cuneata* Gould.
 626. *Modiolaria africana* Bartsch.
 627. *Modiolaria ima* Bartsch.
 628. *Solemya*, species?
 629. *Lyonsia*, species?
 630. *Thracia*, species?
 631. *Chistoconcha insignis* Smith.
 632. *Crassatellites acuminata* Sowerby.
 633. *Cuma concentrica* Bartsch.
 634. *Cardita* (*Carditamera*) *laticostata* Smith.
 635. *Venericardia elata* Sowerby.
 636. *Venericardia africana* Bartsch.
 637. *Thecalia concamerata* Bruguiere.
 638. *Miodontiscus minimus* Smith.
 639. *Condylocardia io* Bartsch.
 640. *Carditella rugosa* Sowerby.
 641. *Carditopels alfredensis* Bartsch.
 642. *Digitaria africana* Bartsch.
 643. *Chama gryphina* Lamarck ?.
 644. *Lucina globosa* Forskal.
 645. *Loripes clausus* Philippi.
 646. *Phacoides vaidei* Smith.
 647. *Phacoides despecta* Smith.
 648. *Diplodonta africana* Bartsch.
 649. *Diplodonta almo* Bartsch.
 650. *Felaniella alfredensis* Bartsch.
 651. *Ungulina alfredensis* Bartsch.
 652. *Scintilla turtoni* Bartsch.
 653. *Basterotia tricotata* Sowerby.
 654. *Erycina alfredensis* Bartsch.
 655. *Erycina ima* Bartsch.
 656. *Erycina curia* Bartsch.
 657. *Erycina rifaca* Bartsch.
 658. *Erycina*, species?
 659. *Erycina*, species?
 660. *Bornia fortidentata* Smith.
 661. *Bornia farica* Bartsch.
 662. *Bornia arica* Bartsch.
 663. *Bornia* (*Pythina*) *rotundata* Deshayes.
 664. *Bornia* (*Pythina*) *africana* Bartsch.
 665. *Rocheportia similis* Smith.
 666. *Rocheportia natalensis* Smith.
 667. *Rocheportia enora* Bartsch.
 668. *Rocheportia elsa* Bartsch.
 669. *Rocheportia milda* Bartsch.
 670. *Rocheportia helena* Bartsch.
 671. *Rocheportia io* Bartsch.
 672. *Rocheportia farma* Bartsch.
 673. *Lasea turtoni* Bartsch.
 674. *Aligena ovalis* Smith.
 675. *Cardium turtoni* Sowerby.
 676. *Papyridea* (*Fulvia*) *natalensis* Sowerby.
 677. *Dorsinia hepatica* Lamarck.
 678. *Tivela compressa* Sowerby.
 679. *Sunetta ovalis* Sowerby.
 680. *Circe alfredensis* Bartsch.
 681. *Chione*, species?
 682. *Anomalocardia alfredensis* Bartsch.
 683. *Antigona verrucosa* Linnaeus.
 684. *Antigona* (?), species?
 685. *Paphia disrupta* Sowerby.
 686. *Venerupis*, species?
 687. *Petricola ponsobyi* Sowerby.
 688. *Petricola*, species?
 689. *Tellina albinella alfredensis* Bartsch.
 690. *Tellina natalensis* Krauss.
 691. *Tellina ponsobyi* Sowerby.
 692. *Tellina triangularis* Chemnitz.
 693. *Tellina regularis* Smith.

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|---|---|
| 694. <i>Tellina</i> , species? | 708. <i>Donax sordidus</i> Hanley. |
| 695. <i>Tellina</i> , species? | 709. <i>Donax simplex</i> Sowerby. |
| 696. <i>Metis orbicularis</i> Sowerby. | 710. <i>Donax burnupi</i> Sowerby. |
| 697. <i>Macoma littoralis</i> Krauss. | 711. <i>Solen alfredensis</i> Bartsch. |
| 698. <i>Macoma africana</i> Sowerby. | 712. <i>Solen capensis</i> Fischer. |
| 699. <i>Semele capensis</i> Smith. | 713. <i>Schizodesma spengleri</i> Linnaeus. |
| 700. <i>Abra africana</i> Bartsch. | 714. <i>Eastonia africana</i> Bartsch. |
| 701. <i>Theora alfredensis</i> Bartsch. | 715. <i>Macra adansoni</i> Philippi. |
| 702. <i>Gastrana abildgaardiana</i> Spengler. | 716. <i>Macra alfredensis</i> Bartsch. |
| 703. <i>Psammobia burnupi</i> Sowerby. | 717. <i>Lutraria capensis</i> Deshayes. |
| 704. <i>Psammobia</i> , species? | 718. <i>Saxicava arenacea</i> Smith. |
| 705. <i>Psammotellina capensis</i> Sowerby. | 719. <i>Saxicava lirata</i> Smith. |
| 706. <i>Donax serra</i> Chemnitz. | 720. <i>Gastrochaena</i> , species? |
| 707. <i>Donax bertini</i> Pilsbry. | 721. <i>Pholas alfredensis</i> Bartsch. |

MOLLUSKS REPORTED FROM SOUTH AFRICA NOT CONTAINED IN THE
COLLECTION OF THE UNITED STATES NATIONAL MUSEUM FROM
THAT AREA.

In the following list have been cited all those species which have been reported from South Africa, which are not in the United States National Museum from that area. I have given the type-locality from which each species was first reported. If no locality follows the name, it signifies that none was given in the original description. Many of the species listed from South Africa belong to entirely different faunal areas, and the authors who reported them should very carefully compare their material with the species from the type-locality. They will probably find, as I have found in many instances, that their shells, while bearing a superficial resemblance to the South African mollusks, are not specifically the same.

Acanthochites variegatus Nierstrasz, Natal.

Acanthopleura afra Rochebrune, Cape of Good Hope; Madagascar.

quatrefagesi Rochebrune, Cape of Good Hope.

spinigera Sowerby.

Actis tenuistriata Sowerby, Port Elizabeth.

Acrilla gracilis A. Adams, Indo Pacific.

Actaeon affinis A. Adams, China Seas; New Ireland; Borneo; Philippine Islands.

Agulhasia davidsoni King, Agulhas Bank.

Alvania pura Gould, Simoda.

Anatina villosiuscula Macquart, Island of Harris.

Ancilla angustata Sowerby, China Seas.

australis Sowerby, New Zealand.

cinnamomea Lamarck.

dimidiata Sowerby, Red Sea.

hastata Martens, Agulhas Bank.

lineolata A. Adams.

montrousieri Sowerby, Lifu.

optima Sowerby, Durban.

ordinaria Smith, Port Shepstone.

Ancillaria contusa Reeve.

Anomia tridentata Forskal.

Aphelodoris ? brunnea Bergh, Kalk Bay.

Apicalia biformis Sowerby, Durban.

Aplustrum amplustre Linnaeus, Asia.

Aphysia allochroa Bergh, Knysna.

cürhiæra Quoy and Gaimard, Isle of France.

depilans Linnaeus, Mediterranean Sea.

eusiphonata Bergh, East London.

gargantua Bergh, Simons Town.

- Aplysia gilchristi* Bergh, False Bay.
 lobata Bergh, Woodstock Beach (Table Bay).
 marmorata Blainville, La Rochelle.
 monochroa Bergh, Hermanus Islands.
 poikilia Bergh, Kalk Bay.
 savignana Ferussac, Red Sea.
 woodii Bergh, East London.
- Arca africana* Sowerby, Tugela River mouth.
 coelata Reeve.
 divaricata Reeve, Annaan Island, Pacific Ocean.
 domingensis Lamarck, Santo Domingo, West Indies.
 erythraensis Jonas, Red Sea.
 imbricata Bruguiere, Senegal; Malacca.
 inaequivalvis Bruguiere, East Indies.
 inflata Krauss, Natal.
 kraussii Philippi, Natal.
 lactea Linnaeus, Mediterranean Sea.
 modiolus Poli, Sicily.
 natalensis Krauss, Natal Point.
 navicularis Bruguiere, Santo Domingo.
 nivea Chemnitz, Red Sea.
 nucleus Linnaeus, Europe.
 obliquata Gray.
 ovata Gmelin, Red Sea.
 quoyi Payer, Valinco, France.
 scabra Poli, Sicily.
 scapha Chemnitz, Red Sea.
 squamosa Lamarck, Seas of New Holland.
- Archidoris capensis* Bergh, Cape Point.
 granosa Bergh, Tongaati River and Woodstock Beach (Table Bay).
- Archidoris* (?) *scripta* Bergh, off the Hongazi River.
- Argonauta böttgeri* Maltzan.
 kochiana Dunker.
 tuberculata Shaw.
- Astratium andersoni* Smith, Durban.
 gilchristi Sowerby, Natal.
- Atys cylindrica* Helbling, East Indies.
- Auricula caffra* Kuster, Natal Coast.
 kraussii Kuster, Natal Coast.
 kusteri Krauss, Natal Coast.
 livida Deshayes.
 pellucens Menke, Demerara.
 umlassiana Krauss, Natal Coast.
- Auriculina lucida* Sowerby, Port Elizabeth.
- Auricula flabellum* Reeve, Venezuela.
 zebra Reeve, Moreton Bay.
- Azinaea arabica* H. Adams.
- Bankivia varians* Becquard, Australia.
- Basterotia obtusa* Sowerby, Durban.
- Bittium quadricinctum* Smith, Durban.
- Bornia seminulum* Philippi, Sicily.
- Buccinum arcularia* Linnaeus.
 cariniferum Kuster, Natal Coast.

- Buccinum cerealis* Menke, Cape of Good Hope.
clathratum Adams and Reeve, Cape of Good Hope.
coccinella Lamarck, Coasts of Brittany, France.
coronatum Bruguiere, Madagascar.
dunkeri Kuster, Cape of Good Hope.
flavum Bruguiere.
glaucum Gmelin, Indian Ocean.
horridum Dunker.
laevigatum Martini, East Indies.
lineatus DaCosta, Cornwall, England; West Indies.
marginulatum Lamarck, Mediterranean Sea.
marmoratum Reeve, Capul, Philippine Islands.
perdix Linnaeus, America.
perlatum Kuster, Natal Coast.
pictum Dunker, East Indies.
pyramidalis Gmelin, Tranquebar.
rubiginosum Reeve, Red Sea.
rufulum Kiener, Mediterranean Sea?
signata Dunker, East Indies.
stula Reeve, Annaa Island, Pacific Ocean.
testiculus Linnaeus, Jamaica.
violaceum Quoy and Gaimard, Table Bay.
- Bulla aperta* Linnaeus, Cape of Good Hope.
cylindracea Pennant, British Isles.
elongata A. Adams, Ceylon; Cebu.
fuscus Linnaeus, Indian Ocean; Amboyna.
natalensis Krauss, Natal.
puncto-striata Mighels, Casco Bay, Maine.
rostrata A. Adams, Port Lincoln, Australia.
solidula Linnaeus.
soluta Gmelin, Ceylon.
spelta Linnaeus, Mediterranean Sea.
umbilicata Montagu, England.
voluta Quoy and Gaimard, Guam.
- Bullia achatina* Lamarck, South Africa.
ancillaeformis Smith, Port Shepstone.
capensis Euthyme, Cape of Good Hope.
mauritiana Gray, Madagascar.
mediolaevis Martens, False Bay.
pustulosa Sowerby, Natal.
similis Sowerby, Natal.
- Bullina oblonga* Sowerby, Pondoland.
- Calliostoma bisculptum* Smith, Durban.
burnupi Smith, Durban.
crossleyae Smith, Isezela, Natal; Port Shepstone.
farquhari Sowerby, Port Elizabeth.
granoliratum Sowerby, Cape Point, False Bay.
iridescent Sowerby, Cape Natal.
layardi Sowerby, Pondoland.
perfragile Sowerby, Vasco da Gama Peak; Lion's Head.
- Callochiton dentatus* Spengler, Cape of Good Hope.
Calyptraea cicatricosa Reeve, Luzon, Philippine Islands.
corroea Reeve, Australia.

- Cancellaria imbricata* Watson, Cape of Good Hope.
lamellosa Hinds, Indian Archipelago; Cape of Good Hope; Ceylon; Strait of
Macassar, Philippine Islands.
producta Sowerby, off Umhloti River mouth (Natal).
Carditis calyculata Lamarck, Atlantic Ocean.
cincticincta Bruguière, America.
elata Sowerby, Port Elizabeth.
pulcherrima Sowerby, Cape Natal.
variegata Bruguière, East Indies and Africa.
Carditella capensis Smith, Simons Bay.
Cardium adamsii Reeve, Borneo.
asiaticum Bruguière, East Indies.
burnupi Sowerby, Durban.
fasciatum Montagu, England.
gilchristi Sowerby, Algoa Bay.
lima Gmelin, Nicobara.
natalense Krauss, Natal.
papyraceum Chemnitz, East Indies.
rubicundum Reeve, Zanzibar.
rubrum Montagu, England.
rugosum Lamarck, Indian Ocean.
seminulatum Gray, West Indies.
tenuicostatum Lamarck, Timor; New Holland.
Cassia areola Lamarck, seas of India; Moluccas.
bisulcata Schubert and Wagner, Manila.
craticulatus Euthyme.
pila Reeve, China.
torquata Reeve, New Holland.
Carolina quadridentata Lesueur, Barbados.
trispinosa Lesueur, Antilles and Indian Ocean.
Cerithiopsis chapmaniana Smith, Isezela.
insignis Smith, Port Shepstone.
lirata Sowerby, Port Elizabeth.
natalensis Smith, Tongaat, Natal.
neglecta C. B. Adams, Panama.
? peilei Smith, Port Elizabeth.
purpurea Angas, New South Wales.
Cerithium albobaricosum Smith, Providence Reef; Mascarenes; Hawaiian Islands.
caeruleum Sowerby, Red Sea.
citrinum Sowerby, Masbate, Philippine Islands.
columna Sowerby, Philippine Islands.
dialeucum Philippi.
echinatum Lamarck.
egenum Gould, Wilson Island.
foveolatum Sowerby, Port Elizabeth.
inaequisculpta Kobelt, Durban.
kochii Philippi, East Africa.
lactum Kiener.
mediterraneum Deshayes, Mediterranean.
moniliferum Dufresne, Indian Ocean.
natalensis Kobelt, Natal Coast.
obeliscum Bruguière, East Indies; Polynesia; Mauritania.
pingue A. Adams, Philippine Islands.

- Cerithium rissoides* Sowerby.
 rufonodulosum Smith, Algoa Bay.
 rugosum Wood.
 taeniatum Sowerby, New Guinea.
 trilineatum Philippi, Pantellaria Island.
 zebrum Kiener, Indian Ocean; Isle of France.
 ?*Chaetopleura apiculata* Say, East Coast North America.
 destituta Sykes, Durban.
 papilio Spengler, Table Bay.
Chama gryphoides Linnaeus, Mediterranean Sea.
 icstoma Conrad, Hawaiian Islands.
Chemnitzia lactea Krauss, Natal.
 trachealis Gould, Simons Bay.
Chione ambigua Deshayes, Mozambique.
Chiton africana Rochebrune, Dakar; Cape Verde; Table Bay; Cape of Good Hope.
 brevispinosus Sowerby, Johanna Island, East Africa.
 capensis Gray, Cape of Good Hope.
 carmichaelis Gray, Cape of Good Hope.
 granulatus Gmelin, American Oceans.
 indicus Sowerby, Cape of Good Hope.
 labeculatus Reeve.
 litteratus Krauss, Natal.
 lyratus Sowerby.
 macgillivrayi Carpenter, Tristan d'Acunha.
 marginatus Pennant, Scarborough.
 nigrovirescens Blainville, Cape of Good Hope.
 pertusus Reeve, Simons Bay.
 pruinosis Gould, Off Fort Santa Cruz, Rio Janeiro.
 punctulata Krauss, South Africa.
 pustulatus Krauss, Natal.
 solea Sowerby, Cape of Good Hope.
 spiculosus Reeve, West Indies.
 subgigas Blainville.
 sykesi Sowerby, Cape Point Lighthouse; Vasco da Gama Peak.
 textilis Gray, Cape of Good Hope.
 wahlbergi Krauss, Table Bay.
 watsoni Sowerby, Cape of Good Hope.
Chitonellus striatus Lamarck (?), New Holland.
Chlamys fultoni Sowerby, Amatikulu, Conical Hill.
 gilchristi Sowerby, Vasco da Gama.
 humilis Sowerby, Great Fish Point; Cape St. Blaize.
 natalensis Smith, Durban.
Chromodoridella mirabilis Eliot, Natal.
Chromodoris albolimbata Bergh, Off Sebastian Bluff.
 annulata Eliot, Zanzibar.
 euelpis Bergh, Off Umhloti River, mouth.
Chromodoris (?) *lineata* Souleyet, East Africa.
 runcinata Bergh, Philippine Islands.
Cingulina acutilirata Sowerby, Port Elizabeth.
 circinata A. Adams, Japan.
Cioniscus unilineatus Sowerby, Port Elizabeth.
Circs divaricata Chemnitz, Ceylon.

- Clanculus carinatus* A. Adams.
 laceyi Sowerby, South Africa.
 mixtus Smith, Port Elizabeth.
 waltonae Sowerby, Port Elizabeth.
Clathurella commoda Smith, California.
 westcotti Smith, Durban.
Clavatula impages Adams and Reeve, China Sea.
 parilis Smith, Durban.
Collonia bicarinata Martens, Agulhas Bank.
Columbella atrata Gould, Hong Kong.
 avena Reeve, Cape Colony.
 biflammata Reeve.
 burnupi Smith, Natal.
 consanguinea Sowerby, Port Elizabeth.
 filmerae Sowerby, Pondoland.
 floccata Reeve, Cape Colony.
 kitchingi Sowerby, Cape of Good Hope.
 lactea Duclos, Indian Ocean and coast of Seychelles.
 langleyi Sowerby, Port Elizabeth.
 leptalea Smith, Unkomaas, Natal.
 ligula Duclos.
 mendicaria (var.) Lamarck, Indian Seas.
 mercatoria Lamarck, Atlantic Ocean; coasts of Island of Goree; Antilles.
 obtusata Sowerby, Society Islands.
 pulchella Sowerby.
 pumila Sowerby, Baie Boise (sud de la Nouvelle Caledonie).
 sagena Reeve, Japan.
 shepstonei Smith, Port Shepstone; Zanzibar.
 turturina Lamarck.
 undata Duclos.
 varians Sowerby, Galapagos Islands.
 versicolor Sowerby, Annoa or Chain Island.
Cominella glandiformis Reeve.
 intinctum Reeve.
 prolongata Smith, Cape Colony.
 semisulcata Sowerby, Port Elizabeth.
Cominella? sulcata Sowerby, Port Elizabeth.
Conus altispiratus Sowerby, Agulhas Bank; South Africa.
 anceps Sowerby, Philippine Islands.
 aplustre Reeve.
 arachnoideus Gmelin.
 arenatus Hwass, Asia; Amboyna; Cape of Good Hope.
 bandanus Hwass, Moluccas.
 betulinus Linnaeus.
 capitaneus Linnaeus, (?), Asia.
 ceylanensis Hwass, Ceylon.
 ceylonicus Chemnitz, Ceylon.
 consors Sowerby, Philippine Islands.
 conspersus Reeve.
 daulleyi var. Cross.
 dupontii Kiener.
 elongatus Chemnitz, New Guinea.
 eucoronatus Sowerby, Cape St. Blaize.
 flavidus Lamarck.

Conus fulvus Sowerby, South Africa.

geographus Linnaeus, India.

gilchristi Sowerby, Umhlangakulu River, mouth, Natal.

gilvus Reeve, Saldanha Bay, South Africa.

glans Bruguiere, St. Bernard, coast of Africa; Madagascar; Isle of France, Moluccas.

gradatulus Weinkauff, Agulhas Bank, South Africa.

hebraeus Linnaeus, India.

innexus A. Adams, Natal

jaspideus Kiener, Algoa Bay, South Africa.

lamarcki Kiener.

lautus Reeve.

legatus Lamarck, Indian Ocean.

lineatus Chemnitz, East Indies.

lividus Lamarck, Indian Ocean.

loveni Krauss, Cape of Good Hope; Natal.

miles Linnaeus, India.

miliaris Hwass.

minimus Linnaeus.

mozambicus Hwass, Mozambique.

natalensis Sowerby, Cape Natal.

nemocanus Hwass, Namoca Island.

nimbosus Hwass, East Indies.

obscurus Humphreys, Masbate, Philippine Islands.

patens Sowerby, Vasco da Gama Peak, Cape of Good Hope.

pauperculus Sowerby, Cape of Good Hope.

piperatus Dillwyn, Indian Ocean.

plumbeus Reeve.

primula Reeve.

punctatus Gmelin.

queketti Smith, Natal.

quercinus Bruguiere, Isle of France; Madagascar; Cape of Good Hope.

rattus Lamarck, America.

scitulus Reeve.

simplex Sowerby, East Indies.

tessellatus Born, African Ocean.

textile Linnaeus, Bandam.

tinianus Hwass, Tinian Island.

turritus Sowerby, Agulhas Bank, South Africa.

vermiculatus Lamarck, Asia; Africa; America.

verreauxii Kiener, Cape of Good Hope.

vezillum Gmelin.

Coralliophila fragosa Smith, Scottburgh, Natal.

fritschi Martens, False Bay, Cape of Good Hope.

Corbula cuneata Hinds, Catbalogan, Philippine Islands; Agulhas Bank; Cape of Good Hope.

rugifera Smith, Umkomaas, Natal.

tunicata Hinds, Island of Corregidor, Bay of Manila; Straits of Macassar; Cape of Good Hope.

Crassatella abrupta Sowerby, Umhloti River, mouth.

africana Sowerby, Cape Infanta.

angulata Sowerby, Umhlangakulu River, mouth.

crebrilirata Sowerby, Agulhas Bank, South Africa.

gilchristi Sowerby, Martha Point (South Coast).

- Crassatella glabrata* Lamarck, Ocean d'Afrique ? de l'Inde ?
subquadrata Sowerby, Agulhas Bank, South Africa.
lenuis Sowerby, Cape St. Blaize.
- Crepidula adspersa* Dunker, Guinea.
capensis Quoy, Table Bay; Cape of Good Hope.
rugulosa Dunker, Cape of Good Hope.
- Cryptodon investigatoris* Smith, Ceylon, off Colombo.
polygonius Gould, Simons Bay.
subradiatus Gould, Simons Bay.
- Cryptogramma arabauensis* Nevill, Arakon.
- Cultellus decipiens* Smith, Port Alfred.
pellucidus Pennant, British.
- Cuspidaria forticostata* Sowerby, Cape Natal.
gilchristi Sowerby, Cape Natal.
nasuta Sowerby, Cape Point Lighthouse.
optima Sowerby, Umtralumi River, mouth.
- Cycas capensis* Krauss, Knysna River.
ferruginea Krauss, Knysna River.
- Cyclostoma ligatura* Lamarck, Madagascar.
- Cyclostrema cingulifera* A. Adams, Negros, Philippine Islands; Japan.
inflata Sowerby, Port Elizabeth.
pellucida Smith, Port Shepetone, Natal.
rotundata Sowerby, Port Elizabeth.
semisculptum Martens, Agulhas Bank; South Africa.
- Cylichna fragilis* Jeffreys, Spezia, Spain.
nitens Smith, Fiji Islands.
- Cylindrobulla sculpta* G. and H. Nevill, Ceylon.
- Cypraea angustata* Gmelin.

annulus Linnaeus, Amboyna.
arabica Linnaeus, East Indies; Sunda Strait.
barclayi Reeve, Mauritius.
caput-serpentis Linnaeus, Mauritius.
carneola Linnaeus, Asia.
caurica Linnaeus.
clandestina Linnaeus.
costata Gmelin.
cribraria Linnaeus.
cruenta Gmelin.
erosa Linnaeus, Mauritius and Ascension Islands.
felina Gmelin.
fultoni Sowerby, South Africa.
fuscodentata Gray, Cape of Good Hope.
helvola Linnaeus.
isabella Linnaeus, Mauritius; Madagascar.
lamarckii Gray, Indian Ocean.
listeri Gray, Bengal.
lynx Lamarck, coasts of Madagascar; Isle of France.
miliaris Gmelin.
minorideus Melvill, Pacific Ocean?
moneta Linnaeus, Mediterranean Sea (shores of Africa).
nebulosa Kiener, Cape of Good Hope.
neglecta Sowerby (Mauritius; Borneo)?
ocellata Linnaeus.
ovulata Lamarck.

Cypraea producta Gaskoin.

quadripunctata Gray.

staphylaea Linnaeus

stercus-muscarum Lamarck.

stolida Linnaeus.

sulcata Gaskoin, Manila, Philippine Islands.

tabescens Solander, Amboyna.

tortirostris Sowerby, The Kowie.

undata Lamarck, Indian Ocean.

variolaria Lamarck, Indian Ocean.

vitrea Gaskoin, Philippine Islands.

viczac Linnaeus.

Cypricardia angulata Lamarck, Seas of New Holland.

Cyrena africana Krauss, Gauritz River, South Africa.

albida Krauss, South Africa.

gauritziana Krauss, Gauritz River, South Africa.

olivacea Krauss, Gauritz River, South Africa.

pusilla Parreys, upper Nile.

radiata Parreys, branch of the Nile.

Cytherea alucinans Sowerby, Natal.

compressa Sowerby, Cape of Good Hope.

dolabella Sowerby, Red Sea.

hebraea Lamarck, Indian Ocean?

hepatica Lamarck, Eastern Seas (les mers Australes?).

manillae Sowerby, Philippine Islands.

nucleus Krauss, Natal.

picta Lamarck, Indian Ocean.

polita Sowerby.

savignyi Jonas, Red Sea.

subquadrata Krauss, Knysna River, South Africa.

transversa Sowerby, Natal.

zonaria Lamarck, Indian Ocean.

Daptnella minuscula Smith, 4 miles south of Port Elizabeth; Port Alfred.

Delphinula granulosa Dunker, Table Bay, South Africa.

Dentalium africanum Sowerby, Natal.

belcheri Sowerby, East Indian Archipelago.

dentalis Linnaeus, Mediterranean.

glabrum Montagu, England.

inflexum Sowerby, Natal.

lessoni Deshayes, New Guinea.

longitrorum Reeve, Philippine Islands.

novemcostatum Lamarck, France; Mediterranean.

politum Linnaeus, India.

Diaulula capensis Bergh, Mossel Bay.

Diaulula (?) *morosa* Bergh, Mossel Bay.

Dione floridella Gray, Africa; Guinea Coast.

Diphyllidia lineata Otto, Indian Ocean.

Dolabella rumphii Cuvier, Moluccas.

scapula Martyn, Amboyna.

Dolabrisera triangularis Watson, Simons Bay; Cape of Good Hope.

Dolium costatum Menke, Mediterranean.

favanni Hanley.

imbriatum Sowerby, Manila Bay.

luteostoma Kuster, Japan; Philippine Islands.

- Dolium natalensis* E. A. Smith, Durban Bluff, Natal.
procellarum Euthyme, Cape of Good Hope.
variegatum Lamarck, Seas of New Holland.
- Donax aemulus* Smith, Macusi River, near Quilimane (Mozambique).
aurantiaca Krauss, Natal.
elongata Lamarck, coasts of Africa on Atlantic Ocean.
erythraensis Bertin, Red Sea.
exarata Krauss, Natal.
faba Chemnitz, Malabar.
lubrica Hanley.
madagascariensis Wood, Madagascar.
nitida Deshayes, Moreton Bay.
oweni Gray, Africa.
ringens Lamarck, Indian Ocean.
semisulcata Hanley.
spiculum, Reeve.
- Doridium capense* Bergh, East London.
Doriopsis capensis Bergh, Cape St. Blaize.
Doriopsis caesia Bergh, Roman Rock Lighthouse.
callosa Bergh, False Bay.
capensis Bergh, Umlanga River.
- Doris coriacea* Abraham, South Africa; Seychelles; Cape Hardy's Islands.
 (?) *glabella* Bergh, Buffalo Bay.
natalensis Krauss, Natal.
 (?) *perplexa* Bergh, off Cape St. Blaize.
 (?) *pseudida* Bergh, near Table Bay.
- Dosinia consobrina* Deshayes, Cape of Good Hope.
lamellata Reeve, North Australia.
linctia Pultney, England.
pubescens Philippi, New Holland; Madagascar.
- Drillia albotessellata* Smith, Port Shepstone.
cantharus Reeve, Cebu.
rugisculpta Sowerby, The Kowie.
- Elusa natalensis* Smith, Port Shepstone.
- Engina astricta* Reeve.
natalensis Melvill, Natal.
- Epidromus crebriliratus* Sowerby, Glendower Beacon (near Port Alfred).
- Epitonium macromphalus* Smith, Tongaat, Natal.
shepstoneense Smith, Port Shepstone.
- Erato guttula* Sowerby, Mauritius.
sulcifera Gray, Panama (?); Cape of Good Hope (?)
- Ervilia bisculpta* Gould, Kagosima.
scaliola Issel, Red Sea.
- Ethalia africana* Smith, Port Alfred.
- Euchelus quadricarinatus* Chemnitz, Mediterranean.
- Eulima atlantica* Smith, St. Helena.
dilecta Smith, Umkomaas, Natal.
distorta Deshayes, Grignon, France; Sicily; Britain.
leptostoma Smith, Issezela, Natal.
munda Smith, Umkomaas, Natal.
natalensis Smith, Durban.
solida Sowerby, Philippine Islands.
translucida Smith, East London.

- Euplocamus capensis* Bergh, South Africa.
Euthria eburnea Sowerby, Pondoland.
 filmerae Sowerby, Pondoland.
 lacertina Gould, Simons Bay.
 magellani Velain, St. Paul and Amsterdam.
 pura Martens, South Africa.
 queketti Smith, Natal (10 miles from Durban).
 simoniana Petit, Simons Bay.
Fusiolaria badia Krauss, Natal.
 filamentosa Lamarck, Indian Ocean.
 lugubris Adams and Reeve, Cape of Good Hope.
 rutila Watson, Cape of Good Hope.
Penella cerithina Philippi, Red Sea.
 fulgida A. Adams, British.
 natalensis Smith, Catos Creek, near Durban.
Fusurella australis Krauss, Natal.
 cafra Gmelin, Cape of Good Hope.
 conoidea Reeve, Cape of Good Hope.
 cruciata Krauss, Natal.
 dubia Reeve, Port Natal.
 finbriata Reeve, Port Molle, northeast coast of Australia.
 fumata Reeve.
 incarnata Krauss, Table and False Bays, Natal.
 neglecta Deshayes, Mediterranean and Adriatic Seas.
 nubecula Linnaeus, Mediterranean Sea.
 obtusa Sowerby, Cape of Good Hope.
 robusta Sowerby, South Africa.
 rota Reeve, Cape of Good Hope.
 sagittata Reeve, Cape of Good Hope.
 scutella Say, Raine Island; Torres Strait.
 sieboldi Reeve, Japan.
 similis Sowerby, Australia.
 trapezina Krauss, Cape of Good Hope.
Fusurellidea concatenata Cross and Fischer, Port Lincoln.
 hiantula Lamarck, Indian Ocean.
Fistulana gregata Lamarck.
Fossarus capensis Pilsbry, South Africa.
Fulgur africanus Sowerby, Port Elizabeth.
Fusus capensis Dunker, Cape of Good Hope.
 clausicaudatus Hinds, Cape of Good Hope.
 crenulatus Sowerby, Cape of Good Hope.
 lineolatus Dunker, Cape of Good Hope.
 mandarinus Duclos, China Sea.
 pyrrhostoma Watson, off Cape of Good Hope.
 radialis Watson, off Cape of Good Hope.
 robustior Sowerby, Cape of Good Hope.
 scrobiculatus Dunker, Cape of Good Hope.
 subcontractus Sowerby, Cape Natal.
 sulcata Gray.
 toreuma Martyn, Pulo-Condore.
Gadinea afra Gmelin, Goree Island, Africa.
Geitodoris capensis Bergh, Glendower Beacon.
Gibbula armillata A. Adams, Australia.
 beckeri Sowerby, The Kowie.

- Gibbula biporcata* Sowerby, Cape Town.
calyculata Sowerby.
fulgura Gould.
incincta Sowerby, Port Elizabeth.
perspectiva Sowerby, Pondoland.
townsendi Sowerby, Mekran Coast.
- Glyphis crucifera* Pilsbry, Natal.
fuscocrenulata Smith, Port Shepstone and Umkomaas, Natal.
levicostata Smith, Tongaat and Port Shepstone, Natal.
- Gymnoplax anagyptus* Rochebrune, Cape of Good Hope.
melanotrophus Rochebrune, Cape of Good Hope.
- Haliotis queketti* Smith, Isezela, Natal.
- Haminea gracilis* Sowerby, Durban.
subcylindrica Sowerby, Durban.
- Harpa conoidalis* Lamarck.
crassa Philippi.
ventricosa Lamarck, East Indies.
- Helix perspicua* Linnaeus.
- Hemisepius typicus* Steenstrup.
- Hipponyx acuta* Quoy, New Ireland.
australis Quoy and Gaimard, New Zealand.
barbata Sowerby, Toubouai, Society Islands.
granulata A. Adams, west coast of Africa.
- Hyalaea limbata* Orbigny, Atlantic Ocean.
truncata Krauss, False Bay, Cape of Good Hope.
uncinata Rang, Atlantic and Indian Oceans.
- Hydatina circulata* Martyn, Tranquebar.
undata Bruguiere, Tranquebar.
- Iacra seychellarum* H. and A. Adams, Seychelles Islands.
- Ianthina balteata* Reeve, Cape of Good Hope.
nitens Menke.
pallida Harvey, Europe.
prolongata Blainville.
umbilicata Orbigny, Cuba.
- Idaliella umoenula* Bergh, Gordons Bay.
- Iridina wahlbergi* Krauss, Limpopo River.
- Ischnochiton elizabethensis* Pilsbry, Port Elizabeth.
lentiginosus Sowerby.
- Janus capensis* Bergh, False Bay and Buffalo Bay.
- Kalinga ornata* Alder and Hancock, Coromandel coast (India).
- Kellia macandrewi* Fischer, North Spain.
mactroides Hanley, Cape of Good Hope.
natalensis Smith, Durban.
- Lamellaria mauritiana* Bergh, Mauritius?
- Lampusia murrayi* Smith, off Cape of Good Hope.
- Latiazis tortilis* H. and A. Adams, China.
- Latirus abnormis* Sowerby, Natal.
alboapicata Smith, Durban.
imbricatus Sowerby, Tugela River mouth, Cape of Good Hope.
- Leucotina elongata* Sowerby, Port Elizabeth.
natalensis Smith, Isezela, Natal.
- Libitina angulata* Lamarck.
- Lima multicostrata* Sowerby, Mediterranean?
equamosa Lamarck, America.
tenera Turton, England.

- Limopsis natalensis* Krauss, Natal.
Liotia bicarinata Martens, near Agulhas Bank, South Africa.
 pulcherrima A. Adams, Cape of Good Hope.
Lippistes cornu Gmelin, Cape of Good Hope.
Littorina aspera Philippi, America.
 decollata Krauss, Natal.
 glabrata Philippi, Payta, Peru, and Cape Natal.
 intermedia Philippi, Red Sea; Natal; Swan Point; New Holland; Pacific Ocean.
 laevis Philippi.
 natalensis Krauss, Natal.
 newcombi Reeve, Hawaiian Islands.
 pintado Wood, Hawaiian Islands.
 punctata Deshayes, Senegal.
 sicac Chemnitz, Sugar Islands?
Loligo burnupi Smith, Port Shepstone.
 reynaudi Orbigny, Atlantic Ocean; Cape of Good Hope.
Loripes rosacea Smith, Durban.
Lotorium cingulatum Lamarck.
 decipiens Reeve, Mindanao.
 durbanense Smith, Durban.
 gracile Reeve, Philippine Islands.
 nassariforme Sowerby, Natal.
 ranelloides Reeve, Luzon, Philippine Islands.
Lucina columbella Lamarck, Touraine and Bordeaux (fossil).
 dalliana Vanatta, South Africa.
 exasperata Reeve, Indian Ocean.
 fragilis Philippi, Panormi, Bay of Naples.
 lactea Lamarck, Mediterranean.
 liratula Sowerby, South Africa.
 pecten Lamarck, Senegal
 quadrirulcata Orbigny.
Luponia castanea Higgins, Southeastern Africa.
Lutraria intermedia Sowerby, British?
 oblonga Chemnitz.
Macoma retrorsa Sowerby, Durban.
Macrochisma compressa A. Adams.
 producta A. Adams, Australia.
Mactra achatina Chemnitz, Tranquebar?; Ceylon?; Nicobar?
 australis Lamarck, Seas of New Holland.
 capensis Sowerby, Port Elizabeth.
 glabrata Linnaeus, African Ocean?
 ovalina Lamarck, Indian Ocean.
 polita Chemnitz, East Indies.
Malleus legumen Reeve, Philippine Islands.
 tigrinis Reeve, Moluccas.
Mangilia africana Sowerby, Umhloti River, mouth (Natal).
 beckeri Sowerby, The Kowie.
 casta Reeve.
 cava Carpenter?, Panama.
 clathrata de Serris, Mediterranean.
 costata Donovan, England.

- Mangilia elizabethae* Smith, 4 miles south of Port Elizabeth.
 shepstonensis Smith, Port Shepstone.
 striolata Scacchi, Spain.
- Margarita dilecta* A. Adams, Straits of Magellan.
Margaritifera vulgaris Schumacher.
- Marginella albanyana* Gaskoin, Albany, Africa.
 angustata Sowerby, Cape Point.
 bensoni Reeve, Green Point, Cape of Good Hope.
 biplicata Krauss, Cape of Good Hope.
 bulbosa Reeve, Borneo.
 chrysea Watson, Sea Point, Cape Town.
 cinera Jousseume.
 corusca Reeve, Singapore.
 crassilabrum Sowerby, West Indies.
 cystiscus Redfield, Cape of Good Hope.
 diadochus Adams and Reeve, Sunda Strait.
 dunkeri Krauss, Cape of Good Hope.
 electrina Sowerby, Port Elizabeth.
 epignus Reeve, Mogadore, Morocco.
 floccata Sowerby, South Africa.
 fusiformis Hinds, Strait of Malacca.
 inconspicua Sowerby.
 ingloria Smith, Kowie, Cape Colony.
 interrupta Lamarck.
 labrosa Redfield, West Indies.
 lineato-labrum Gaskoin.
 lucida Marrat, Natal.
 metculfei Angas, Port Jackson.
 multizonata Krauss, Cape of Good Hope.
 newcombi Reeve, Agulhas Bank, Cape of Good Hope.
 pavillus Reeve.
 pellicula Weinkauff, Natal Coast.
 perminima Sowerby, South Africa.
 ponsonbyi, Sowerby South Africa.
 poucheti Petit, West Africa.
 pseustes Smith, Port Alfred.
 quadrifasciata Marrat, Kabenda, Africa (30 miles north of the Congo).
 reevei Krauss, Cape of Good Hope.
 ros Reeve.
 rufula Gaskoin.
 savignyi Issel, Red Sea.
 seminula Gould, False Bay, Cape of Good Hope.
 shepstonensis Smith, Port Shepstone.
- Marsenia capensis* Bergh, Cape Point; Lion's Head.
 leptoconcha Bergh, off Cape Point.
- Megalocranchia maxima* Pfeffer, Cape of Good Hope.
Megalebennus sella Sowerby, South Africa.
Melania nitida Lamarck, Fossile de Grignon et de Parnes.
Melapium elatum Schubert and Wagner, East Indies.
Melibe rosea Rang, Cape of Good Hope.
Minolia congener Sowerby, Cape Infanta; Cape Blais.
Miralda crispa Sowerby, Port Elizabeth.

- Mitra acuminosa* Melvill, Algoa Bay, South Africa.
alauda Sowerby, Mauritius.
bovei Kiener, Red Sea.
cadaverosa Reeve, Philippine Islands; Lord Hoods Islands.
carbonacea Hinds, Cape of Good Hope.
chinensis Gray, China.
circula Kiener.
cratilia A. Adams, South Africa.
crenifera Lamarck, Indian Ocean.
crenulata Lamarck, Indian Ocean.
cyliindracea Reeve.
daedala Reeve, Ticao, Philippine Islands.
episcopalis Linnaeus.
exasperata Gmelin, Indian Ocean.
flammea Quoy, Moluccas.
flammigera Reeve.
fuscescens Pease, Hawaiian Islands.
interlirata Reeve, Masbate, Philippine Islands.
limbifera Lamarck.
litterata Lamarck, Indian Ocean.
luctuosa A. Adams, Mauritius.
obeliscus Reeve, Negros, Philippine Islands.
paupercula Linnaeus, Philippine Islands.
pecta Reeve.
pica Reeve.
pretiosa Reeve.
punctostriata A. Adams, Ceylon.
rufescens A. Adams, China Seas.
schroeteri Dillwyn.
texturata Lamarck.
zephyrina Duclos, Mauritius.
- Modiola cylindrica* Krauss, Natal.
elegans Gmelin, West Africa.
mucronata Philippi, Java.
petagnae Scacchi, Malta.
rhomboidea Hanley, The Gambia, West Africa; Tugela River, South Africa.
- Modiolaria cumingiana* Dunker, Australia.
marmorata Forbes, British.
- Monodonta australis* Deahayes, New Holland.
Monoptygma casta A. Adams, China Seas.
Montacuta capensis Sowerby, South Africa.
natalensis Smith, Umkomaas, Natal.
- Mormula macandreae* A. Adams, Gulf of Suez.
rissoina A. Adams, Japan.
- Murex azicornis* Lamarck, Moluccas.
banksii Sowerby, Moluccas.
brevispina Lamarck.
capensis Sowerby, Cape of Good Hope.
concatenatus Lamarck, Isle of France.
dunkeri Krauss, Cape of Good Hope.
fallax Smith, Natal (10 miles from Durban).
mitraeformis Sowerby.
polygonus Gmelin, Indian Ocean.

- ramosus* Linnaeus, Jamaica.
ricinus Linnaeus, Asia.
septangularis Montagu, England.
trapezium Linnaeus, Amboyna.
trivialis A. Adams.
tubercularis Montagu, England.
tuberculatum Linnaeus.
turbinellus Linnaeus, Asia.
undatum Chemnitz, Tranquebar.
wahlbergi Krauss, Natal.
- Mya suborbicularis* Montagu, England.
Mytilus afer Gmelin, Mediterranean.
capensis Dunker, Cape of Good Hope.
crenatus Lamarck, Caroline Islands.
discors Linnaeus, Islands of Norway.
elongata Krauss, Natal; South America.
magellanicus Chemnitz, Straits of Magellan.
nicobaricus Chemnitz, Nicobar Islands.
semistriata Krauss, Natal coast.
- Nassa algida* Reeve, Moreton Bay, Australia.
analogica Sowerby, Cape Infanta.
bicallosa Smith, West Australia; Swan River; Cape Natal.
circumtexta Martens, Plettenberg Bay; Francis Bay, South Africa.
coccinea A. Adams Mss.?
desmoulioides Sowerby, Umhloti River, mouth (Natal).
elata Gould, Liberia.
eusulcata Sowerby, Tugela River, mouth.
fenestrata Marrat.
filmerae Sowerby, Pondoland.
filosa Gray, Philippine Islands.
gaudiosa Hinds, Malacca.
gemmaata Lamarck.
incrassata Muller, Denmark.
lentiginosa A. Adams, Masbate.
margaritifera Dunker.
myristica Hinds, Cape of Good Hope.
natalensis Smith, Natal.
plicatella A. Adams, Wallwich Bay, Africa.
producta Sowerby, Durban.
pulchella A. Adams, Cape of Good Hope.
serotina A. Adams, Australia.
spurca Gould, Simons Bay.
sulcifera A. Adams, Algoa Bay.
trifasciata A. Adams, Vigo Bay.
turbinca Gould, Liberia.
- Nassaria gracilis* Sowerby, Tugela River, mouth.
Natica areolata Recluz, Capul, Philippine Islands.
burnupi Smith, Durban Bay.
cancellata Lamarck, West Indies.
didyma Bolten.
genuanus Reeve, South Africa.
kraussi Smith, Durban, Natal; Mauritius.
lamarcki Reeve.
lurida Philippi, Sicily.

- Natica mamilla* Lamarck, Indian Ocean.
marochiensis Gmelin, Africa; Morocco; Antilles.
psila Watson, off Cape of Good Hope.
pygmaea Philippi
sagraiana Orbigny, Cuba.
sebae Souleyet.
simplex Sowerby, South Africa.
taeniata Menke.
zanzibarica Recluz, Zanzibar.
Neera capensis Smith, Cape of Good Hope.
Nembrotha capensis Bergh, Kalk Bay.
Neocardia angulata Sowerby, Port Elizabeth.
Neptuneopsis gilchristi Sowerby, Cape of Good Hope.
Nerita aterrima Gmelin, Philippine Islands.
comma-notata Reeve, West Indies.
exuvia Linnaeus, America; Asia.
fasciata Krauss, Natal coast.
listeri Recluz, West Indies.
melanostoma Gmelin, Indian Ocean.
papilla Gmelin, Tranquebar.
plexa Chemnitz, Tranquebar.
plicata Linnaeus.
polita Linnaeus, Asia.
quadricolor Gmelin, Red Sea.
sanguinolenta Menke, Philippine Islands; Mauritius.
textilis Gmelin.
umlaasiana Krauss, Knysna River.
Neritina crepidularia Lamarck.
natalensis Reeve, Natal.
zebra Lamarck, Central America.
Niso interrupta Sowerby, Central America.
Nucula belcheri Hinds, Cape of Good Hope.
bicuspidata Gould, Liberia.
irregularis Sowerby, Struis Point.
pulchra Hinds, Cape of Good Hope.
radiata Forbes and Hanley, British.
Nuculana compta Sowerby, Cape Natal.
gemmulata Sowerby, mouths of Tugela and Umhlote Rivers.
lamellata Sowerby, Cape Natal.
Nucukina ovalis Smith, Cape of Good Hope.
pretiosa Gould, Simons Bay.
Obeliscus aciculatus A. Adams, Philippine Islands.
sulcatus A. Adams, Tahiti.
teres A. Adams, Philippine Islands.
Ocenebra natalensis Smith, Umkomaas and Port Shepstone.
Octopus argus Krauss, Natal.
vulgaris Lamarck, European seas.
Odotomella robusta Sowerby, The Kowie.
Odotomia angasi Tryon, Australia.
chitonicola Smith, Umkomaas, Natal.
Oliva bulbosa Marrat.
caerulea Bolten.
capensis Sowerby, Cape of Good Hope.
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- Oliva dactyliola* Duclos, Moluccas.
elegans Lamarck, Ceylon.
nana Lamarck, America.
parillus Reeve.
picta Reeve, Philippine Islands.
scitula Marrat.
truncata Marrat, Cape of Good Hope.
- Ommatostrephes ovalaniensis* Lesson, Ovalan Island (Caroline Islands).
Onchidium burnupi Collinge, Umlaas Lagoon, Natal.
Onchidium peroni Cuvier, Isle of France.
Oniscia macandrewi Sowerby, Japan.
Onithochiton alveolatum Rochebrune, Cape of Good Hope.
isipingoensis Sykes, Isipingo, South Africa.
- Oscaniella nigropunctata* Bergh, off Cape Infanta.
Oscaniopsis pleurobranchiana Bergh, Tugela River.
Ostrea cucullata Born, Ascension Island.
echinata Quoy and Gaimard, Amboyna.
lacerata Hanley, Senegal?
lentiginosa Sowerby.
parasitica Chemnitz, Cape of Good Hope or East Indies.
prismatica Gray.
pusio Linnaeus, Australia.
rosacea Deshayes, Senegal.
rufa Lamarck, America.
senegalensis Gmelin, West Africa.
tuberculata Lamarck, Timor Island.
- Ovula carnea* Lamarck, Mediterranean and coasts of Barbary.
Oxynoë pellucidus A. Adams.
- Palio* (?) *capensis* Quoy and Gaimard, Cape of Good Hope.
- Paludina knysnaensis* Krauss, Knysna River and Zootendals Valley.
Pandora dissimilis Sowerby, Sea Point, Cape Town.
similis Sowerby, Durban.
- Panopea natalensis* Woodward, Port Natal.
Paraplysia lowii Gilchrist.
- Parmophorus imbricatus* Quoy, New Ireland.
- Patella albonotata* Smith, Umkomaas, Natal.
chinensis Linnaeus, Mediterranean.
concolor Krauss, Natal.
decemcostata Smith, Algoa Bay.
echinulata Krauss, Table Bay.
exarata Nuttall, California.
fasciata Krauss, Natal.
graeca Linnaeus, Mediterranean.
maculata Blainville, Cape of Good Hope.
morbida Reeve, Cape of Good Hope.
natalensis Krauss, Natal.
nigroalba Blainville, Cape of Good Hope.
oblecta Krauss, Table Bay.
patriarcha Pilsbry, Cape of Good Hope.
plicata Born, Strait of Magellan.
radiata Krauss, Natal.
rustica Linnaeus.
safiana Lamarck, Morocco.
sanguinans Reeve, Cape Natal.

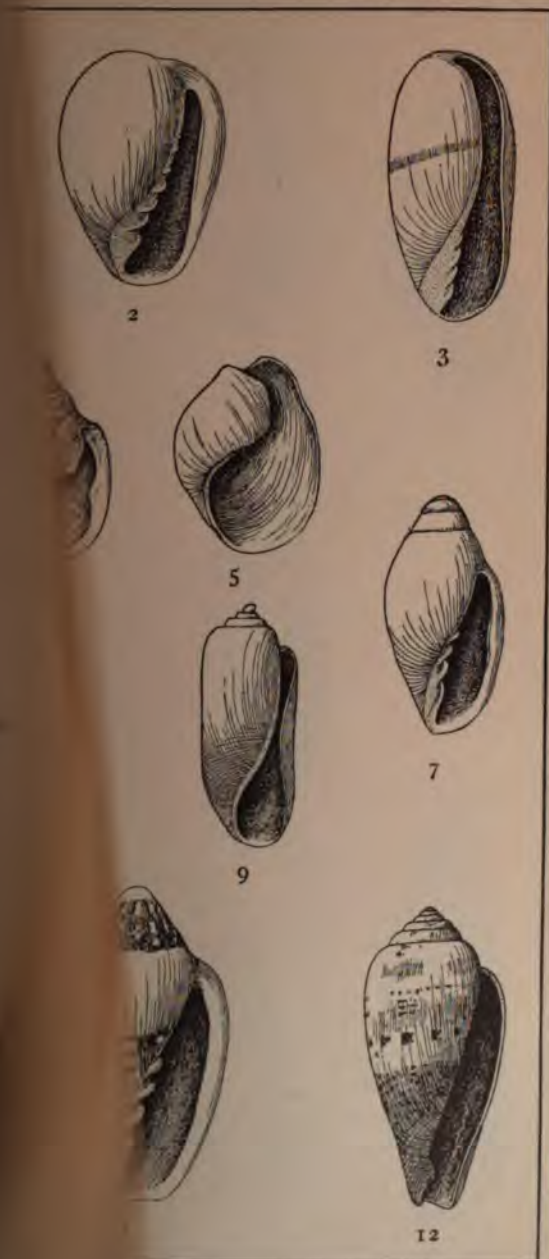
- Patella schroeteri* Krauss, Shore of Elim and Saldanha Bay.
tabularis Krauss, Table Bay.
testudinaria Linnaeus.
umbrella Gmelin, Africa.
- Pecten capensis* Gray, Cape of Good Hope; Port Elizabeth.
limatula Reeve.
squamosus Gmelin.
tinctus Reeve.
- Pectunculus belcheri* Adams and Reeve, Cape of Good Hope.
bicolor Reeve, Gulf of California.
castaneus Lamarck, American Seas.
inaequalis Sowerby, Panama; Real Dejos.
- Pedicularia sicula* Swainson.
- Peristernia fenestrata* Gould, Simons Bay, Cape of Good Hope.
- Perna anomioides* Reeve, California.
dentifera Krauss, Natal.
vulsella Lamarck, Seas of India; America.
- Petalocochus octosectus* Carpenter.
- Petricola cordieri* Deshayes, California.
cultellus Deshayes, Ceylon.
robusta Sowerby, Panama.
typica Jonas, St. Thomas Island.
ventricosa Krauss, Natal.
- Phasianella kraussi* Smith, Kalk Bay; False Bay, Cape of Good Hope.
tenuis Philippi, Sicily.
- Philine berghi* Smith.
- Pholas branchiata* Gould, Liberia.
dactylus Linnaeus, Europe.
falcata Reeve, Hudson Bay.
fragilis Sowerby, Samar, Philippine Islands.
- Phorus corrugatus* Reeve.
- Phos laevigatus* A. Adams, China.
roseatus Hinds, Sumatra.
- Photina nigra* A. Adams.
- Physopsis africana* Krauss, Port Natal.
- Pileopsis pilosus* Deshayes.
- Pinaxia coronata* A. Adams, Philippine Islands.
- Pinna aequilatera* Martens.
madida Reeve, Port Essington, New Holland.
natalensis Smith, Durban.
pernula Chemnitz, St. Croix (West Indies).
saccata Linnaeus, Mediterranean; East Indies?
serra Reeve, Moreton Bay.
squamosissima Philippi, South Carolina.
vezillum Born.
- Pisania crenilabrum* A. Adams, West Indies.
tritonoides Reeve, Ticao, Philippine Islands.
- Planaxis acuta* Krauss, Natal.
sulcatus Quoy and Gaimard, Amboyna and Mauritius.
- Plaziphora parva* Nierstrasz, Mozambique.
setigera King, Cape Horn.
- Pleurobranchaea melanopus* Bergh, off Cape Point.
- Pleurobranchus capensis* Vayssiere, Cape of Good Hope.
granulatus Krauss, False Bay, Cape of Good Hope.

- Pleurophyllidia capensis* Bergh, East London.
euchroa Bergh, off Cape Hong Klip and Buffalo Bay.
gilchristi Bergh, Sebastian Bluff, Cape St. Blaize, Cape Point.
microdonta Bergh, off Constable Hill.
natalensis Bergh, Cape of Good Hope.
- Pleurotoma anteridion* Watson, off Cape of Good Hope.
balaiformis Sowerby, Vasco da Gama Peak.
bijubata Reeve, Burias, Philippine Islands.
burnupi Sowerby, Durban.
capensis Smith, Port Elizabeth.
castanea Reeve.
cingulifera Lamarck.
fossata Sowerby, Cape Vidal, Natal.
fucata Reeve.
fulgurans Krauss, Knysna.
gilchristi Sowerby, Tugela River, Cape of Good Hope.
gravis Hinds, Cape of Good Hope.
inclinata Sowerby, Mauritius.
kraussi Smith, Cape of Good Hope.
ligaria Sowerby, Lion's Head, Cape of Good Hope.
lobata Sowerby, Cape Natal and Buffalo River.
marmorata Lamarck.
monilifera Pease, Hawaiian Islands.
nux Reeve, Cape of Good Hope.
rubinicolor Reeve.
scitocostata Sowerby, Glendower Beacon (near Port Alfred).
sigillata Reeve.
stolida Hinds, Cape of Good Hope.
tigrina Lamarck.
tripartita Smith, South Africa.
tumida Sowerby, Agulhas Bank, South Africa.
turriplana Sowerby, Cape St. Blaize.
vertebrata Smith, Persian Gulf.
wilkiae Sowerby, Port Elizabeth.
- Plicatula australis* Lamarck, Seas of New Holland; Island of Fourneau.
Polypus capensis Eydoux and Souleyot, Cape of Good Hope.
horridus Orbigny, Red Sea.
rugosus Boec, Senegal.
- Poromya curta* Sowerby, Cape Natal.
gilchristi Sowerby, Umtualumi River, mouth.
granosissima Sowerby, Cape Natal.
striata Sowerby, Vasco da Gama Peak (False Bay).
- Poronia australis* Sowerby, Baie Boisée (Nouvelle Calédonie).
- Psammobia corrugata* Deshayes, Cebu, Philippine Islands.
figlina Gould, Liberia.
ornata Deshayes, Ticao, Philippine Islands.
pallida Deshayes, Red Sea.
- Psammotua donacioides* Reeve, Port Adelaide, Australia.
lunulata Deshayes, Philippine Islands.
- Pseudoliva ancilla* Hanley, Caffraria.
Pseudomurex meyerendorffi Calcar.
Puncturella fastigiata A. Adams, Eastern Seas.
noachina Linnaeus.

- Purpura anaxares* Duclos.
arachnoides Lamarck, Indian Ocean.
bufo Lamarck, Seas of India ?
cancellatum Quoy and Gaimard, Tonga Labu.
cingulata Linnaeus, Iceland.
clathrata Blainville, Cape of Good Hope.
dubia Krauss, Cape of Good Hope.
elata Blainville, New Holland.
fiacellum Lamarck, China Seas.
granulata Duclos, New Holland.
heptagonalis Reeve, Panama.
lapillus Lamarck, Seas of Europe.
luteostoma Deshayes.
mancinella Lamarck, East Indian Seas.
marginatum Blainville, New Hebrides.
ovalis Blainville, Cape of Good Hope.
perrica Lamarck, Oceans of India.
pura Smith, Umkomas.
rudolphi Lamarck, Oceans of India.
scobina Quoy, New Zealand.
succincta Lamarck, Seas of New Zealand.
trigona Reeve, China and Malacca.
verillum Lamarck, Indian Ocean.
wahlbergi Krauss, Natal.
zeyheri Krauss, Cape of Good Hope.
- Pyramidella mitralis* A. Adams, Philippine Islands.
Pyrazus palustris Bruguiere, East Indies; Australia.
Pyrula ficioides Lamarck.
lineata Lamarck.
paradiasiaca Reeve, Ceylon; Mozambique.
- Radius gracillimus* Smith, near Durban.
- Raeta pellicula* Deshayes, Japan.
- Ranella affinis* Broderip, Annoa Island, Pacific Ocean.
anceps Lamarck.
crumena Lamarck, India ?
granifera Lamarck.
lamellosa Dunker, Japan.
leucostoma Lamarck, New Holland.
livida Reeve, Annoa Island, Pacific Ocean.
pusilla Broderip, Pacific Ocean (Lord Hoods Island).
semigranosa Lamarck.
siphonata Reeve, Philippine Islands.
- Rapana nodosa* A. Adams, Philippine Islands.
- Riccinula aspera* Lamarck.
morus Lamarck, Isle of France.
muticus Lamarck.
- Rissoa adjacens* Smith, 4 miles south of Port Elizabeth.
crawfordi Smith, Algoa Bay.
elegantula Angas, Aldinga Bay.
farquhari Smith, 4 miles south of Port Elizabeth.
nigra Krauss, Algoa and Table Bays.
- Rissoina ambigua* Gould, Clermont, Tonnerre Island.
annulata Dunker, Japan.
crassa Angas, Port Jackson.

- Rissoina durbanensis* Smith, Durban.
 shepstonensis Smith, Port Shepstone.
Ruma simiae Chemnitz, East Indies; Philippine Islands.
Saxicava arctica Gmelin.
 australis Lamarck, Kangaroo Island.
 flaccida Gould, Hong Kong and Simons Bay.
Scala aculeata Sowerby, Philippine Islands, China, etc.
 bullata Sowerby, Capul Island, Philippine Islands.
 eborea Smith, Port Shepstone; Durban.
 millecostata Pease, Hawaiian Islands.
 robillardii Sowerby, Mauritius.
Scalaria clathratula Montagu, England.
 clathrus Sowerby, Mediterranean Sea; West Indies.
 coronata Lamarck.
 fragilis Hanley, West Indies.
 fucata Pease, Hawaiian Islands.
 jukesiana Forbes, Australia.
 lactea Krauss, Natal.
 pseudo-scalaris Brocchi.
 replicata Sowerby, Lord Hoods Island.
 simplex Sowerby, Natal.
Scintilla compta Sowerby, Durban.
 durbanensis Sowerby, Durban.
 elongata Sowerby, Durban.
 queketti Sowerby, Durban.
 turgida Deshayes, Samar, Philippine Islands.
Scutum imbricatum Quoy and Gaimard, New Holland.
 unguis Linnaeus, Amboyna.
Semele cordiformis Reeve, Indian Ocean.
Separatista grayi A. Adams, Cape of Good Hope.
Sepia australis Quoy and Gaimard, Agulhas Bank, South Africa.
 burnupi Hoyle, Natal.
 capensis Orbigny, Cape of Good Hope.
 hierredda Rang, Goree (Africa).
 jousseumei Rochebrune, Cape of Good Hope.
 papillata Quoy and Gaimard, Cape of Good Hope.
 vermiculata Quoy and Gaimard, Cape of Good Hope.
Sepioteuthis major Gray.
Sigaretus delesserti Recluz, Philippine Islands.
 planulatus Recluz, Luzon, Philippine Islands; Australia.
Siliqua japonica Dunker, Japan.
 polita Wood.
Siliquaria obtusa Schumacher, Mediterranean Sea.
Siphonaria albofasciata Krauss, Natal Point.
 cyaneomaculata Sowerby, The Kowie.
 natalensis Krauss, Natal.
 nigerrima H. Adams, Umhloti River, Natal.
 tenuicostulata Smith, Umhloti River, Natal.
 variabilis Krauss, Table Bay; off shore of Natal.
Sistrum affine Pease, Kingsmill Islands.
 coronatum H. Adams, Barkly Island; Mauritius.
 elongatum Blainville.
 lividum Reeve, Negros, Philippine Islands.
 parvulum Gould, Simons Bay, Cape of Good Hope.

- Sistrum squamuliratum* Smith, Isipingo.
squamosum Pease, Kingsmill Islands.
- Solariella beckeri* Sowerby, The Kowie.
infundibulum Watson, Agulhas Bank, South Africa.
peresculpta Sowerby, Cape Natal.
sculpta Sowerby, Durban.
splendens Sowerby, Natal.
undata Sowerby, Agulhas Bank, South Africa.
- Solarium caelatum* Hinds, *cancellatum* Krauss, Algoa Bay.
cingulum Kiener, Indian Ocean.
cylindraceum Dillwyn, West Indies.
dorsuosum Hinds, Philippine Islands.
laevigatum Lamarck.
maximum Philippi.
trochoides Deshayes, Philippine Islands.
variegatum Gmelin.
- Solen corneus* Lamarck, Java.
gouldi Conrad, America?
legumen Linnaeus, Mediterranean Sea.
marginatus Koch, Africa.
regularis Dunker, Malacca.
rosea Gmelin, Red Sea.
sloanei Gray.
vespertina Gmelin, Atlantic Ocean; Mediterranean Sea.
- Solenomya togata* Poli.
- Solidula tessellata* Reeve, Red Sea.
- Sphenia decurtata* A. Adams, Luzon; Catanuan, Tayabas Province, Philippine Islands.
mindorensis Adams and Reeve, Mindoro.
natalensis Smith, Durban.
philippinarum A. Adams, Sibunga, Zebu; Manila Bay, Luzon.
- Spiroglyphus spirorbis* Sowerby.
- Spirula solandri* Gray.
- Spondylus ducalis* Chemnitz, East Indies.
nicobaricus Chemnitz, Nicobar Islands.
- Staurodoris verrucosa* Bergh, St. James.
- Stomatella articulata* A. Adams, Australia; Lord Hoods Island; South Seas.
cancellata Krauss, Table Bay.
sulcifera Lamarck, Seas of New Holland.
- Strigilla trotteriana* Sowerby, Durban.
- Strombus floridus* Lamarck, Indian Ocean; Moluccas.
fusiformis Sowerby.
gibberulus Linnaeus, Asia.
lamarchii Gray, East Indies.
lentiginosus Linnaeus, Asia.
mauritanus Lamarck, Mauritius.
- Sunetta contempta* Smith.
- Tapes cumingii* Sowerby, Philippine Islands.
dactyloides Sowerby, Luzon.
deshayesi Hanley, Philippine Islands.
lochi Philippi.
kraussi Deshayes, Port Natal.
pullastra Montagu, Devonshire.
textrix Chemnitz, Malabar.



MARINE MOLLUSKS.

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- Teinostoma lucidum* A. Adams, Japan.
Tellimya paula A. Adams, Torres Strait, Australia.
 peculiaris A. Adams, Ceylon.
 similis Smith, Port Alfred.
Tellina africana Sowerby, Algoa Bay.
 analogica Sowerby, Constable Hill, Saldanha Bay.
 calcareo Chemnitz, Ferro Islands.
 candidata Sowerby, Durban.
 capeoides Lamarck, Negros, Philippine Islands; St. Pierre and St. Francis.
 crayfordi Sowerby, Port Elizabeth.
 cumana Hanley, Mediterranean.
 dispar Conrad, Philippine Islands; Hawaiian Islands.
 exulta Gould, Fiji Islands.
 fabula Gmelin, Norwegian Seas; Mediterranean; Atlantic.
 gilchristi Sowerby, off Cape Point Lighthouse.
 inclinata Sowerby, Tugela River, mouth.
 levior Sowerby, Amatikulu River, South Head, Tugela River.
 litoralis Krauss, Natal; Cape of Good Hope.
 ludwigii Krauss, Natal.
 nobilis Hanley, Luzon.
 ordinaria Sowerby, Saldanha Bay.
 perna Spengler, Indian Ocean.
 pharaonis Hanley, Red Sea.
 planissima Anton.
 prismatica Sowerby, Durban.
 pristis Lamarck, Indian Ocean.
 queketti Sowerby, Durban.
 rustellum Hanley, Zanzibar.
 rhomboides Quoy and Gaimard.
 rosea Spengler, Indian Ocean.
 rotundata Montagu, Devonshire.
 rousi Sowerby, Port Elizabeth.
 semen Hanley, Corregidor, Philippine Islands.
 semilaevis Martens, Red Sea.
 tenuis Da Costa, England.
 umbonella Lamarck, King Island, New Holland.
 venusta Deshayes, Sandwich Islands.
 virgata Linnaeus, Indian Ocean.
 virgulata Hanley.
 vulsella Chemnitz, East Indies.
Terebra affinis Gray.
 apicina ? Deshayes, Singapore.
 archimedes Deshayes.
 babylonia Lamarck.
 casta Hinds, Iloilo, Panay, Philippine Islands.
 cingulifera, Lamarck.
 cuspidata Hinds, Cape coast, Africa.
 dimidiata Lamarck, Indian Ocean; Moluccas.
 evoluta Deshayes, Japan.
 fictilis Hinds, Australia.
 filiceras Sowerby, Pondoland.
 geminata Deshayes, Cape Natal.
 grayi Smith.
 lightfooti Smith, Table Bay.

Trobra laevigata Gray.*livida* Reeve, Philippine Islands.*loisae* Smith, Umkomaas, Natal.*longiscata* Deshayes, Philippine Islands.*macandrewii* Smith, Persian Gulf.*monilis* Quoy and Gaimard, Mariana and Caroline Islands.*natalensis* Smith, Umkomaas, Natal.*nebulosa* Sowerby.*pertusa* Born.*raphanula* Lamarck.*rufopunctata* Smith.*straminea* Gray.*subulata* Lamarck, Indian Ocean.*textilis* Hinds, Bay of Manila, Philippine Islands; Strait of Macassar.*thyraea* Melvill, Karachi; Mekran coast.*tiarella* Deshayes, Cape Natal.*Ulys burnupi* Burne, Durban.*elongata* Pease, Hawaiian Islands.*nigrocincta* Martens.*operta* Burne.*Urdia punctulifera* Bergh, False Bay.*racia capensis* Sowerby, South Africa.*ylacodes natalensis* Mörch, Natal.*chogonia kraussii* Kuster, Natal.*vela natalensis* Dunker, Natal.*rejecta* Smith, South Africa.*rnatella suturalis* A. Adams, Japan; Puerto Galero; Mindoro.*rnatina meridionalis* Smith, Natal.*idacna elongata*? Philippine Islands.*iphora burnupi* Smith, Durban.*carteretensis* Hinds, Port Carteret, New Ireland.*gingulatus* A. Adams, Red Sea.*corrugatus* Hinds, New Guinea; Straits of Malacca.*iopa lucida* Stimpson, Simons Bay; Cape of Good Hope.*iton acuminata* Reeve, China.*aegrola* Reeve, China.*africana* A. Adams, Africa?*anus* Lamarck, Indian Ocean.*aquatilis* Reeve, Ticao, Philippine Islands.*australe* Lamarck, near Botany Bay, New Holland.*bractaeus* Hinds, Marquesas; New Ireland; Straits of Malacca.*chlorostoma* Lamarck, Antilles.*cutaceus* Linnaeus.*cynocephalum* Lamarck.*elongatum* Reeve, Philippine Islands.*encausticum* Reeve, Ticao, Philippine Islands.*exaratus* Reeve, New Holland.*fictilis* Hinds, Cape of Good Hope.*gallinago* Reeve, Mindanao, Philippine Islands.*gemmatus* Reeve, Ticao, Philippine Islands.*labiosus* Wood.*lampas* Lamarck, Seas of India.*monilifer* Adams and Reeve, Eastern Seas.*nitidulus* Sowerby, Port Elizabeth.*nodiferus* Lamarck, Atlantic Ocean; Mediterranean Sea.

- Triton pileare* Lamarck, Antilles.
pyrum Reeve, Ticao, Philippine Islands.
rubecula Lamarck, Equatorial?
salicæ Reeve, Luzon, Philippine Islands.
tuberosus Lamarck, Indian Ocean?
vesperum Lamarck.
Tritonia indecora, Bergh off Cape Point.
pallida Smith, False Bay, Cape of Good Hope.
Tritonides minor Sowerby, Cape of Good Hope.
natalensis Smith, Durban.
subrubiginosa Smith, Japan.
Tritonides capensis Bergh, off Glendower Beacon.
Tritonides pustulatus Euthyme, Cape of Good Hope.
Trinia inacta Michels, Sandwich Islands.
oryx Lamarck, Asia; Timor; Senegal.
Trochus solida Reeve, Conchagua, Central America.
Trochus beringulatus Lamarck, Seas of Martinique.
depressus Gmelin, Australia.
dolebratus Linnaeus.
haukynus Reeve.
hybridus Linnaeus, Mediterranean.
imperius Menke, West coast Australia; Cape of Good Hope.
indecorus Philippi.
irruasi Philippi.
isbio Linnaeus, Asia; Africa.
laevissima Martens, South Africa.
ludwigi Krauss, Cape of Good Hope.
nigropunctatus Reeve, Natal.
obscurus Wood.
ornatus Lamarck.
perversus Linnaeus, Mediterranean.
punicus Philippi, New Zealand.
rostris Gmelin, Cape of Good Hope.
scaber Linnaeus.
tasmani Dunker, Cape of Good Hope; Guinea.
terribilis Reeve, Cape of Good Hope.
trochilii Philippi, South Africa.
variegatus Anton.
verruculata Fischer.
virgatus Gmelin, India.
zaphiri Krauss, Cape of Good Hope.
Trophon cordatus Broderip, Pascomayo, Peru.
Tridacna incarnata Reeve, Philippine Islands.
nassutalis Lamarck.
Turbo chrysostomus Linnaeus, Asia.
clathrus Linnaeus, Europe; America.
haukus Watson, Maraku, Fiji Islands.
intercostalis Menke, Indian Ocean.
lucius Linnaeus, Mediterranean.
minutus Sowerby, South Africa.
pafula Dunker, Japan.
ponsonyi Sowerby, Durban.
sanguineus Linnaeus, Algeria.
splendidulus Sowerby.
triangulatus Euthyme, Saint Elizabeth and Cape of Good Hope.

- Turbonilla argentea* Sowerby, Port Elizabeth.
bifasciata A. Adams, Australia; Japan.
candida A. Adams, Japan.
disculus Velain, St. Paul Island, Indian Ocean.
fusca A. Adams, Port Lincoln.
hofmani Angas, Australia?
rufa Philippi, British?
scalaris Philippi, British?
similans Smith, South Africa.
- Turritella bacillum* Kiener, seas of India and China.
declivis Adams and Reeve, China Sea.
excavata Sowerby, Agulhas Bank.
natalensis Smith, Bluff, Durban; Isezela.
- Typhis arcuatus* Hinds, Cape of Good Hope.
- Umbrella indica* Lamarck, Indian Ocean; Isle of France.
- Urosalpinx* ? *contracta* Reeve, Samar.
- Vanikoro deshayesiana* Recluz, Philippine Islands.
gueriniana Recluz, Philippine Islands.
ligata Récluz, Luzon.
- Venerupis lajonkairi* Payer., Corsica.
rugosa Reeve, Swan River, South Africa.
- Venus abbreviata* Krauss, Natal Bay.
africana Mühlfeld., Cape of Good Hope.
corrugatus Gmelin, Mediterranean.
declivis Sowerby, Eastern Seas.
geographica Gmelin, Mediterranean.
intersculpta Sowerby, Algoa Bay.
latilirata Sowerby, Durban.
layardi Reeve, Ceylon.
listeri Gray, East Indies.
malonei Vanatta, South Africa.
obsoleta Chemnitz, Mediterranean.
paupercula Chemnitz, Coromandel Coast.
pectinata Linnaeus, India.
sulcaria Lamarck, Moluccas; Indo-Pacific?
- Vanetus conicus* Dillwyn, West Indies.
nebulosus Dillwyn, West Indies.
tricuspe Mörch, Australia.
- Voluta abyssicola* Adams and Reeve, Cape of Good Hope.
armata Lamarck, Cape of Good Hope.
festiva Lamarck, Central America.
flammeus Gmelin.
ispidula Linnaeus.
micans Dillwyn, Moluccas; Philippine Islands; Isle of France.
mitraiformis Lamarck, Java; New Holland.
ponsonbyi Smith, Natal.
queketti Smith, Natal.
scapha Gmelin, Cape of Good Hope.
turrita Gmelin.
sicac Mühlfeld, South Seas.
- Volutilithes gilchristi* Sowerby, Cape Natal.
- Volutomitra cinnamomea* A. Adams, Natal.
- Zitiphius egyptus* A. Adams, Van Diemens Land.
multiliratum Sowerby.
- Zofa mitriformis* A. Adams, Mino-Sima.

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 2. *Diala almo*, new species, type, length 2mm., p. 123.
 3. *Microsetia helga*, new species, type, length 2.7 mm., p. 133.
 4. *Microsetia gisma*, new species, type, length 2 mm., p. 132.
 5. *Amphithalamus turtoni*, new species, type, length 1 mm., p. 126.
 6. *Sabanea thalia*, new species, type, length 1.7 mm., p. 126.
 7. *Sabanea pyrha*, new species, type, length 1.3 mm., p. 125.
 8. *Microsetia halia*, new species, type, length 2.1 mm., p. 132.
 9. *Assimineia capensis*, new species, type, length 6 mm., p. 135.
 10. *Diala capensis*, new species, type, length 2.5 mm., p. 123.

PLATE 7.

- FIG. 1. *Mangilia niasa*, new species, type, length 3.1 mm., p. 25.
 2. *Mangilia helga*, new species, type, length 3 mm., p. 26.
 3. *Mangilia gisma*, new species, type, length 3.1 mm., p. 24.
 4. *Drillia signa*, new species, type, length 14 mm., p. 21.
 5. *Mangilia benjamini*, new species, type, length 15.3 mm., p. 28.
 6. *Mangilia amplexa* Gould, type, length 8 mm., p. 30.
 7. *Mangilia herilda*, new species, type, length 7.4 mm., p. 28.
 8. *Clionella sybaritica*, new species, type, length 20.5 mm., p. 15.

PLATE 8.

- FIG. 1. *Eugyrina gemnifera lepta*, new subspecies (front), type, length 84.2 mm., p. 93.
 2. *Clavatula helena*, new species, type, length 28 mm., p. 20.
 3. *Daphnella alfredensis*, new species, type, length 9.6 mm., p. 32.
 4. *Eugyrina gemnifera lepta*, new subspecies (back), type, length 84.2 mm., p. 93.

PLATE 9.

- FIG. 1. *Eugyrina gemnifera* Euthyme, length 91 mm. (front), p. 93.
 2. *Epitonium africanum*, new species, type, length 31 mm., p. 62.
 3. *Turbonilla (Pyrgolampros) ansea*, new species, type, length 5 mm., p. 77.
 4. *Eugyrina gemnifera* Euthyme, length 91 mm. (back), p. 93.

PLATE 10.

- FIG. 1. *Amphiperas smithi*, new species, type, length 19.5 mm. (front), p. 96.
 2. *Phasianella africana*, new species, type, length 3.5 mm., p. 145.
 3. *Amphiperas smithi*, new species, type, length 19.5 mm. (back), p. 96.
 4. *Marginella alfredensis*, new species, type, length 2.5 mm., p. 41.

- FIG. 5. *Barleeia smithi*, new species, type, length 1.5 mm., p. 134.
 6. *Triphoris ina*, new species, type, length 9.5 mm., p. 108.
 7. *Triphoris smithi*, new species, adult cotype, length 13 mm., p. 100.
 8. *Triphoris smithi*, new species (tip), cotype, p. 100.

PLATE 11.

- FIG. 1. *Triphoris elsa*, new species, type, length 9.5 mm., p. 101.
 2. *Triphoris helena*, new species, young cotype, length 5.1 mm., p. 99.
 3. *Triphoris milda*, new species, type, length 9.6 mm., p. 102.
 4. *Triphoris oreada*, new species, type, length 8.8 mm., p. 104.
 5. *Triphoris helena*, new species, adult cotype, length 8.6 mm., p. 99.
 6. *Triphoris atea*, new species, type, length 12 mm., p. 98.
 7. *Triphoris sabita*, new species, type, length 3 mm., p. 106.
 8. *Triphoris nina*, new species, type, length 5 mm., p. 108.

PLATE 12.

- FIG. 1. *Alabina africana*, new species, type, length 2 mm., p. 121.
 2. *Cerithiopsis (Cerithiopsis) nina*, new species, type, length 1.9 mm., p. 111.
 3. *Cerithiopsis (Cerithiopsis) nisaba*, new species, type, length 3.4 mm., p. 112.
 4. *Eumeta bia*, new species, type, length 2.7 mm., p. 116.
 5. *Triphoris madria*, new species, type, length 6.5 mm., p. 105.
 6. *Cerithiopsis erua*, new species, type, length 4.5 mm., p. 110.
 7. *Scila smithi*, new species, type, length 3.2 mm., p. 115.
 8. *Cerithiopsis (Cerithiopsis) saba*, new species, type, length 3.8 mm., p. 112.

PLATE 13.

- FIG. 1. *Natica saldontiana*, new species, type, length 14.2 mm. (top), p. 140.
 2. *Natica saldontiana*, new species (profile), p. 140.
 3. *Natica saldontiana*, new species (bottom), p. 140.
 4. *Natica alfredensis*, new species, type, length 17 mm. (top), p. 138.
 5. *Natica stimpsoni*, new species, type, length 38.5 mm. (top), p. 137.
 6. *Natica nemo*, new species, type, length 14.2 mm. (top), p. 139.
 7. *Natica alfredensis*, new species (profile), p. 138.
 8. *Natica stimpsoni*, new species (profile), p. 137.
 9. *Natica nemo*, new species (profile), p. 139.
 10. *Natica alfredensis*, new species (bottom), p. 138.
 11. *Natica stimpsoni*, new species (bottom), p. 137.
 12. *Natica nemo*, new species (bottom), p. 139.
 13. *Natica africana*, new species, type, length 11.3 mm. (top), p. 138.
 14. *Natica africana*, new species (profile), p. 138.
 15. *Natica africana*, new species (bottom), p. 138.

PLATE 14.

- FIG. 1. *Turbonilla (Pyrgiscus) helena*, new species, type, length 3.9 mm., p. 77.
 2. *Pyramidella (Orinella) africana*, new species, type, length 6.1 mm. p. 71.
 3. *Turbonilla (Pyrgiscus) maia*, new species, type, length 7.1 mm., p. 80.
 4. *Pyramidella (Orinella) africana*, new species (tip), p. 71.
 5. *Pyramidella (Orinella) alfredensis*, new species (tip), p. 71.
 6. *Pyramidella (Syrnola) tarpeia*, new species, type, length 3.7 mm., p. 74.
 7. *Pyramidella (Orinella) alfredensis*, new species, type, length 9 mm., p. 71.
 8. *Pyramidella (Syrnola) pyrrha*, new species, type, length 5.8 mm., p. 73.
 9. *Pyramidella (Syrnola) aganea*, new name, type, length 7.5 mm., p. 73.

PLATE 15.

- FIG. 1. *Turbonilla (Pyrgiscus) atossa*, new species, type, length 4.4 mm., p. 78.
 2. *Turbonilla (Pyrgiscus) tefunla*, new species, type, length 4.6 mm., p. 80.
 3. *Pyramidella (Orinella) ima*, new species, type, length 7.5 mm., p. 72.
 4. *Pyramidella (Actaeopyramis) norna*, new species, type, length 5.9 mm., p. 72.
 5. *Turbonilla (Pselliogyra) adaba*, new species, type, length 5 mm., p. 75.
 6. *Pyramidella (Syrnola) hera*, new species, type, length 4 mm., p. 74.

PLATE 16.

- FIG. 1. *Odostomia (Menestho) ficara*, new species, type, length 3.3 mm., p. 88.
 2. *Turbonilla (Ptycheulimella) erma*, new species, type, length 3 mm., p. 75.
 3. *Odostomia (Evalea) acrifia*, new species, type, length 3.4 mm., p. 91.
 4. *Turbonilla (Pyrgiscus) apsa*, new species, type, length 4.9 mm., p. 81.
 5. *Turbonilla (Mormula) cifara*, new species, type, length 15 mm., p. 84.
 6. *Turbonilla (Pyrgiscus) zenobia*, new species, type, length 4 mm., p. 79.

PLATE 17.

- FIG. 1. *Turbonilla (Cingulina) trachealis* Gould, type, length 5.7 mm., p. 82.
 2. *Turbonilla (Cingulina) callista*, new species, type, length 4.2 mm., p. 83.
 3. *Turbonilla (Cingulina) aglaia*, new species, type, length 5.3 mm., p. 83.
 4. *Epitonium aglaia*, new species, type, length 12 mm., p. 63.
 5. *Acrilla thalia*, new species, type, length 33 mm., (tip) p. 64.
 6. *Seila africana*, new species, type, length 7.6 mm., p. 114.
 7. *Turbonilla (Strioturbonilla) secura*, new name, type, length 11.1 mm., p. 76.
 8. *Acrilla thalia*, new species, type, length 33 mm., p. 64.

PLATE 18.

- FIG. 1. *Odostomia (Odostomia) icafra*, new species, type, length 2.4 mm., p. 92.
 2. *Odostomia (Odostomia) irafca*, new species, type, length 1.5 mm., p. 91.
 3. *Odostomia (Menestho) rifaca*, new species, type, length 1.9 mm., p. 88.
 4. *Odostomia (Odostomella) farica*, new species, type, length 1.5 mm., p. 85.
 5. *Odostomia (Menestho) carifa*, new species, type, length 1.5 mm., p. 87.
 6. *Niso alfredensis*, new species, type, length 11 mm., p. 70.
 7. *Odostomia (Pyrgulina) arfica*, new species, type, length 4 mm., p. 86.
 8. *Odostomia (Evalea) cifara*, new species, type, length 3.8 mm., p. 90.

PLATE 19.

- FIG. 1. *Odostomia (Evalea) gea*, new species, type, length 2.6 mm., p. 90.
 2. *Melanella iota*, new species, type, length 1.5 mm., p. 67.
 3. *Odostomia (Egilina) turtoni*, new species, type, length 2 mm., p. 86.
 4. *Turbonilla (Pyrgiscus) tritonis*, new species, type, length 2 mm., p. 79.
 5. *Melanella alfredensis*, new species, type, length 4 mm., p. 66.
 6. *Subeulima magnifica*, new species, type, length 5 mm., p. 70.
 7. *Odostomia (Evalea) aethra*, new species, type, length 3 mm., p. 89.
 8. *Odostomia (Miralda) agana*, new species, type, length 2.4 mm., p. 87.
 9. *Melanella thalia*, new species, type, length 3.2 mm., p. 68.

PLATE 20.

- FIG. 1. *Melanella farica*, new species, type, length 3 mm., p. 67.
 2. *Rissoina eucosmia*, new species, type, length 2.8 mm., p. 131.
 3. *Melanella icafra*, new species, type, length 2.2 mm., p. 66.
 4. *Turbonilla (Careliopsis) carifa*, new species, type, length 2.1 mm., p. 84.

19. 5. *Melanella cifara*, new species, type, length 2.1 mm., p. 69.
 6. *Melanella irafca*, new species, type, length 5.5 mm., p. 69.
 7. *Melanella curifa*, new species, type, length 4.1 mm., p. 65.
 8. *Melanella acrifia*, new species, type, length 9.2 mm., p. 68.

PLATE 21.

- g. 1. *Marginella almo*, new species, type, length 5.4 mm., p. 41.
 2. *Marginella cosmia*, new species, type, length 11.7 mm., p. 37.
 3. *Marginella lepta*, new species, type, length 5.1 mm., p. 40.
 4. *Mitra ima*, new species, type, length 9 mm., p. 44.
 5. *Cythna africana*, new species, type, length 0.7 mm., p. 120.
 6. *Amphithalamus africanus*, new species, type, length 1.2 mm., p. 127.
 7. *Alvania almo*, new species, type, length 2.1 mm., p. 128.
 8. *Alvania alfredensis*, new species, type, length 1.5 mm., p. 128.
 9. *Microsetia irma*, new species, type, length 1.6 mm., p. 133.

PLATE 22

- g. 1. *Leptothyra africana*, new species, type, greater diameter 7.2 mm. (top), p. 147.
 2. *Leptothyra africana*, new species (profile), p. 147.
 3. *Leptothyra africana*, new species (bottom), p. 147.
 4. *Leptothyra spuria* Gould (top), cotype, greater diameter 6.5 mm., p. 146.
 5. *Leptothyra spuria* Gould (profile), p. 146.
 6. *Leptothyra spuria* Gould (bottom), p. 146.

PLATE 23.

- g. 1. *Gibbula loculosa* Gould (top), cotype, greater diameter 8.5 mm., p. 153.
 2. *Gibbula loculosa* Gould (bottom), p. 153.
 3. *Gibbula loculosa* Gould (profile), p. 153.
 4. *Leptothyra quantilla* Gould, type, greater diameter 2.8 mm. (top), p. 148.
 5. *Leptothyra quantilla* Gould (profile), p. 148.
 6. *Leptothyra quantilla* Gould (bottom), p. 148.
 7. *Leptothyra carminea*, new species, type, greater diameter 3.3 mm. (top), p. 148.
 8. *Leptothyra carminea*, new species (profile), p. 148.
 9. *Leptothyra carminea*, new species (bottom), p. 148.
 10. *Clanculus alfredensis*, new species, type, greater diameter 8.7 mm. (profile), p. 150.
 11. *Clanculus alfredensis*, new species (top), p. 150.
 12. *Clanculus alfredensis*, new species (bottom), p. 150.

PLATE 24.

- g. 1. *Helicacis africanus*, new species, type, greatest diameter 9.6 mm. (top), p. 123.
 2. *Calliostoma africana*, new species, type, altitude 12.8 mm. (profile), p. 162.
 3. *Helicacis africanus*, new species (bottom), p. 123.
 4. *Calliostoma africana*, new species (top), p. 162.
 5. *Helicacis africanus*, new species (profile), p. 123.
 6. *Calliostoma africana*, new species (bottom), p. 162.
 7. *Haliotis alfredensis*, new species, type, length 5.5 mm. (exterior), p. 175.
 8. *Haliotis alfredensis*, new species (interior), p. 175.

PLATE 25.

13. 1. *Calliostoma eucoemia*, new species, type, greater diameter 20 mm. (top), p. 161.
 2. *Calliostoma eucoemia*, new species, (bottom), p. 161.
 3. *Calliostoma eucoemia*, new species (profile), p. 161.

- FIG. 4. *Gibbula arvicola* Gould, type, greater diameter 7 mm. (top), p. 133.
 5. *Gibbula arvicola* Gould (profile), p. 133.
 6. *Gibbula arvicola* Gould (bottom), p. 133.
 7. *Melania* *nov.*, new species, type, length 17 mm., p. 93.

PLATE 26.

- FIG. 1. *Gibbula* *lora*, new species, type, greater diameter 9 mm. (top), p. 132.
 2. *Gibbula lora*, new species (profile), p. 132.
 3. *Gibbula lora*, new species (bottom), p. 132.
 4. *Gibbula fulgens* Gould, type, altitude 9 mm. (top), p. 134.
 5. *Gibbula fulgens* Gould (profile), p. 134.
 6. *Gibbula fulgens* Gould (bottom), p. 134.

PLATE 27.

- FIG. 1. *Gibbula* *spolia*, new species, type, greater diameter 8.4 mm. (top), p. 133.
 2. *Gibbula spolia*, new species (profile), p. 133.
 3. *Gibbula spolia*, new species (bottom), p. 133.
 4. *Gibbula fuscata* Gould, cotype, greater diameter 7.3 mm. (top), p. 135.
 5. *Gibbula fuscata* Gould (profile), p. 135.
 6. *Gibbula fuscata* Gould (bottom), p. 135.

PLATE 28.

- FIG. 1. *Gibbula granulosa* Gould, cotype, greater diameter 5.7 mm. (top), p. 133.
 2. *Gibbula granulosa* Gould (bottom), p. 133.
 3. *Gibbula granulosa* Gould (profile), p. 133.
 4. *Cyrtina africana*, new species, type, greater diameter 2.4 mm. (top), p. 155.
 5. *Cyrtina africana*, new species (profile), p. 155.
 6. *Cyrtina africana*, new species (bottom), p. 155.
 7. *Tenaxia ulfredensis*, type, greater diameter 2 mm. (top), p. 155.
 8. *Tenaxia ulfredensis* (profile), p. 155.
 9. *Tenaxia ulfredensis* (bottom), p. 155.
 10. *Gibbula pinnata*, Gould, type, greater diameter 5.4 mm. (profile), p. 160.
 11. *Gibbula pinnata*, Gould (top), p. 160.
 12. *Gibbula pinnata*, Gould (bottom), p. 160.

PLATE 29.

- FIG. 1. *Cyrtostremella africana*, new species, type, greater diameter 2.1 mm. (top), p. 170.
 2. *Cyrtostremella africana*, new species (profile), p. 170.
 3. *Cyrtostremella africana*, new species (bottom), p. 170.
 4. *Uvula fulgens* Gould, type, greater diameter 5 mm. (top), p. 166.
 5. *Uvula fulgens* Gould (profile), p. 166.
 6. *Uvula fulgens* Gould (bottom), p. 166.
 7. *Gibbula melua*, new species, type, greater diameter 5 mm. (profile), p. 159.
 8. *Gibbula melua*, new species (top), p. 159.
 9. *Gibbula melua*, new species (bottom), p. 159.
 10. *Cyrtina ulfredensis*, new species, type, greater diameter 8 mm. (profile), p. 164.
 11. *Cyrtina ulfredensis*, new species, type (top), p. 164.
 12. *Cyrtina ulfredensis*, new species, type (bottom), p. 164.

PLATE 30.

- FIG. 1. *Gibbula thalia*, new species, type, greater diameter 5.5 mm. (top), p. 157.
 2. *Gibbula thalia*, new species (bottom), p. 157.
 3. *Gibbula thalia*, new species (profile), p. 157.

10. 4. *Puncturella africana*, new species, type, long diameter 1.9 mm. (top), p. 177.
5. *Puncturella africana*, new species (side), p. 177.
6. Nepionic shell (back), p. 174.
7. Nepionic shell (front), p. 174.
8. *Gibbula cicer* Menke (profile), p. 156.
9. *Gibbula cicer* Menke (top), p. 156.
10. *Gibbula cicer* Menke (bottom), p. 156.

PLATE 31.

- FIG. 1. *Discopsis alfredensis*, new species, type, greater diameter 1.8 mm. (top), p. 172.
2. *Discopsis alfredensis*, new species (bottom), p. 172.
3. *Discopsis alfredensis*, new species (profile), p. 172.
4. *Fenella almo*, new species, type, length 7.1 mm., p. 134.
5. *Nodulus africanus*, new species, type, length 1.4 mm., p. 125.
6. *Cynisca gloriosa*, new species, type, greater diameter 7 mm. (profile), p. 163.
7. *Cynisca gloriosa*, new species (top), p. 163.
8. *Cynisca gloriosa*, new species (bottom), p. 163.

PLATE 32.

10. 1. *Leptothyra alfredensis*, new species, type, greater diameter 4.8 mm. (top), p. 149.
2. *Leptothyra alfredensis*, new species (bottom), p. 149.
3. *Leptothyra alfredensis*, new species (profile), p. 149.
4. *Gibbula rifaca*, new species, type, greater diameter 5 mm. (top), p. 160.
5. *Gibbula rifaca*, new species (profile), p. 160.
6. *Gibbula rifaca*, new species (bottom), p. 160.
7. *Cyclostremella farica*, new species, type, greater diameter 1.5 mm. (profile) p. 169.
8. *Cyclostremella farica*, new species (top), p. 169.
9. *Cyclostremella farica*, new species (bottom), p. 169.

PLATE 33.

9. 1. *Discopsis turtoni*, new species, type, greatest diameter 2.5 mm. (top), p. 173.
2. *Discopsis turtoni*, new species (bottom), p. 173.
3. *Discopsis turtoni*, new species (profile), p. 173.
4. *Ringicula africana*, new species, type, length 5.2 mm., p. 7.
5. *Discopsis africana*, new species, type, greatest diameter 2.3 mm. (profile), p. 172.
6. *Discopsis africana*, new species (top), p. 172.
7. *Discopsis africana*, new species (bottom), p. 172.

PLATE 34.

10. 1. *Vitrinella ficara*, new species, type, greater diameter 3 mm. (top), p. 167.
2. *Vitrinella ficara*, new species (bottom), p. 167.
3. *Vitrinella ficara*, new species (profile), p. 167.
5. *Styliola africana*, new species, type, length, 4 mm., p. 3.
5. *Vitrinella facira*, new species, type, greater diameter 2 mm. (profile), p. 168.
6. *Vitrinella facira*, new species (top), p. 168.
7. *Vitrinella facira*, new species (bottom), p. 168.

PLATE 35.

10. 1. *Caporbis africana*, new species, type, greater diameter 1.8 mm. (bottom), p. 170.
2. *Caporbis africana*, new species (top), p. 170.
3. *Caporbis africana*, new species (profile), p. 170.
4. *Bullia almo*, new species, type, length 22 mm., p. 54.
5. *Bullia aepynota*, new species, type, length 19 mm., p. 53.

FIG. 6. *Cyclotrema alfredensis*, new species, type, greater diameter 1.7 mm. (profile), p. 169.

7. *Cyclotrema alfredensis*, new species (top), p. 169.

8. *Cyclotrema alfredensis*, new species (bottom), p. 169.

PLATE 36.

FIG. 1. *Pondorbis alfredensis*, new species, type, greater diameter .8 mm. (top), p. 171.

2. *Pondorbis alfredensis*, new species (profile), p. 171.

3. *Pondorbis alfredensis*, new species (bottom), p. 171.

4. *Leptogyra africana*, new species, type, greater diameter 1 mm. (top), p. 173.

5. *Leptogyra africana*, new species (bottom), p. 173.

6. *Leptogyra africana*, new species (profile), p. 173.

7. *Vitrinella (Docomphala) arifca*, new species, type, greater diameter 1.1 mm (top), p. 168.

8. *Vitrinella (Docomphala) arifca*, new species (bottom), p. 168.

9. *Vitrinella (Docomphala) arifca*, new species (profile), p. 168.

10. *Graphis africana*, new species, type, length 2.3 mm., p. 64.

11. *Vanikoro africana*, new species, type, altitude 3 mm., p. 149.

PLATE 37.

FIG. 1. *Vitrinella rifaca*, new species, type, greater diameter 1.8 mm. (top), p. 167.

2. *Vitrinella rifaca*, new species (bottom), p. 167.

3. *Vitrinella rifaca*, new species (profile), p. 167.

4. *Columbella (Anachis) io*, new species, type, length 6.6 mm., p. 54.

5. *Columbella (Seminella) alfredensis*, new species, type, length 6.1 mm., p. 56.

6. *Murex alfredensis*, new species, type, length 6 mm., p. 59.

7. *Vitrinella cijara*, new species, type, greater diameter 1.4 mm. (profile), p. 167.

8. *Vitrinella cijara*, new species (top), p. 167.

9. *Vitrinella cijara*, new species (bottom), p. 167.

PLATE 38.

FIG. 1. *Barbatia cafrina*, new species, type, length 14.2 mm., p. 183.

2. *Cylindrobulla turtoni*, new species, type, length 8 mm., p. 8.

3. *Bullia lara*, new species, type, length 38 mm., p. 53.

4. *Lima africana*, new species, type, length 13.5 mm., p. 187.

5. *Barbatia cafrina*, new species, p. 183.

6. *Littorina africana tryphena*, new subspecies, type, length 7 mm., p. 120.

PLATE 39.

FIG. 1. *Dinoplax gigas alfredensis*, new subspecies, type, length 62 mm., p. 179.

2. *Dinoplax gigas alfredensis*, new subspecies (top), p. 179.

3. *Erycina rifaca*, new species, type, length 1.2 mm., p. 197.

4. *Hochstetteria paramoa*, new species, type, altitude 2.2 mm., p. 184.

5. *Rochefortia io*, new species, type, length 1.1 mm., p. 201.

6. *Hochstetteria alfredensis*, new species, type, altitude 3.6 mm. (exterior), p. 184.

7. *Hochstetteria alfredensis*, new species (interior), p. 184.

PLATE 40.

FIG. 1. *Solen alfredensis*, new species, type, length 96.5 mm. (exterior), p. 208.

2. *Solen alfredensis*, new species (interior), p. 208.

3. *Atrina alfredensis*, new species, type, length 73 mm., p. 183.

PLATE 41.

- FIG. 1. *Crenella alfredensis*, new species, type, altitude 3.2 mm., p. 189.
 2. *Modiolaria africana*, new species, type, length 3.5 mm., p. 190.
 3. *Rocheportia elsa*, new species, type, length 1.8 mm., p. 200.
 4. *Modiolaria ima*, new species, type, length 7 mm., p. 190.
 5. *Modiolaria ima*, new species, p. 190.
 6. *Bornia farica*, new species, cotype, length 3 mm., p. 198.
 7. *Bornia arfica*, new species, type, length 2.8 mm., p. 199.

PLATE 42.

- FIG. 1. *Bornia (Pythina) africana*, new species, type, length 13.8 mm., p. 199.
 2. *Bornia (Pythina) africana*, new species, p. 199.
 3. *Rocheportia helena*, new species, type, length 1.5 mm., p. 201.
 4. *Rocheportia helena*, new species, p. 201.
 5. *Modiolaria cuneata* Gould cotype, length, 11.8 mm. (interior), p. 189.
 6. *Modiolaria cuneata* Gould (exterior), p. 189.
 7. *Erycina ima*, new species, type, length 2.2 mm. (interior), p. 197.
 8. *Erycina ima*, new species (exterior), p. 137.
 9. *Lasea turtoni*, new species, type, length 4.1 mm. (interior), p. 201.
 10. *Lasea turtoni*, new species (exterior), p. 201.

PLATE 43.

- FIG. 1. *Ungulina alfredensis*, new species, cotype, length 18 mm. (exterior), p. 196.
 2. *Ungulina alfredensis*, new species (interior), p. 196.
 3. *Erycina firmata* Gould, type, length 4.8 mm. (exterior), p. 196.
 4. *Erycina firmata* Gould (interior), p. 196.
 5. *Eastonia africana*, new species, type, length 36 mm. (exterior), p. 209.
 6. *Eastonia africana*, new species (interior), p. 209.
 7. *Erycina alfredensis*, new species, type, length 4.9 mm. (exterior), p. 197.
 8. *Erycina alfredensis*, new species, type, (interior), p. 197.

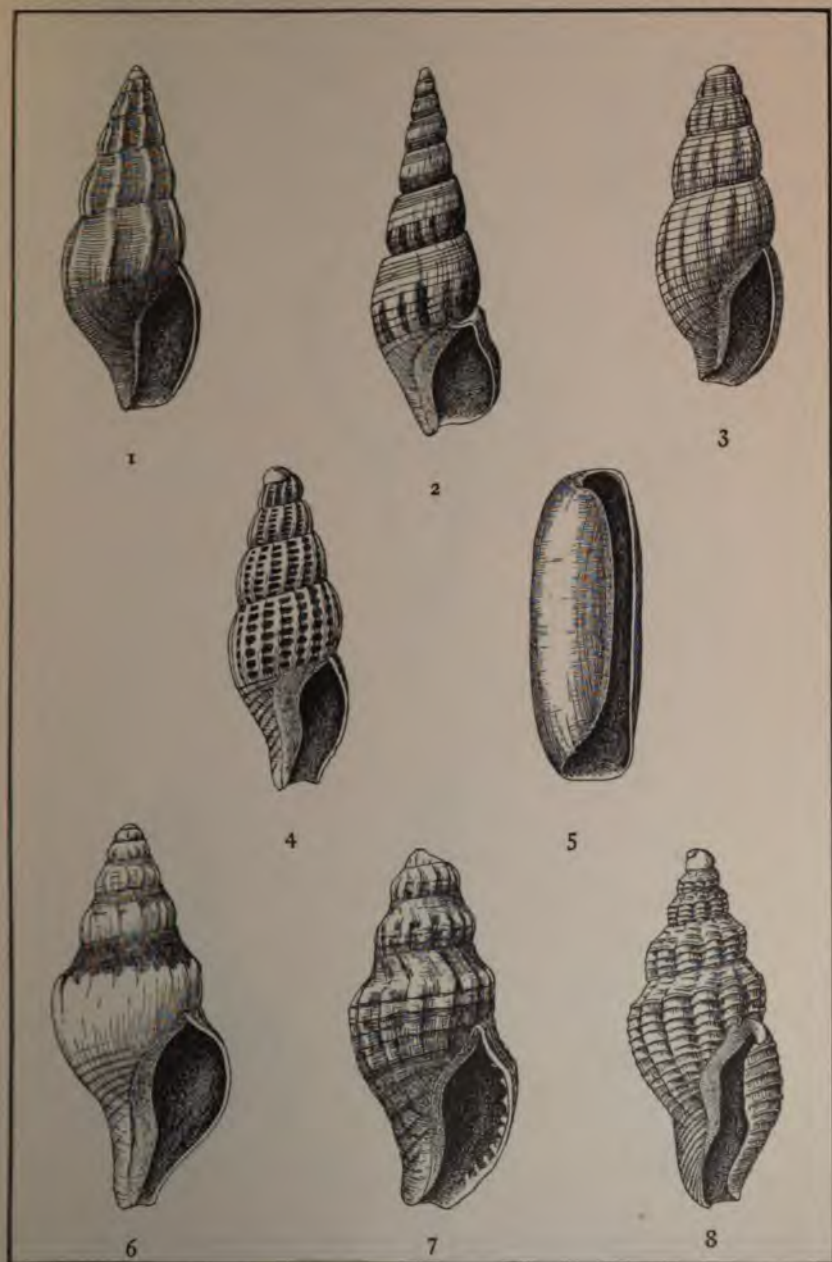
PLATE 44.

- FIG. 1. *Pholas alfredensis*, new species, type, length 41 mm. (exterior), p. 210.
 2. *Pholas alfredensis*, new species (interior), p. 210.
 3. *Anomalocardia alfredensis*, new species, type, length 31 mm. (exterior), p. 203.
 4. *Anomalocardia alfredensis*, new species (interior), p. 203.
 5. *Dentalium strigatum* Gould, cotype, length, 15.1 mm., p. 180.
 6. *Mactra alfredensis*, new species, type, length 41 mm. (exterior), p. 209.
 7. *Mactra alfredensis*, new species (interior), p. 209.

PLATE 45.

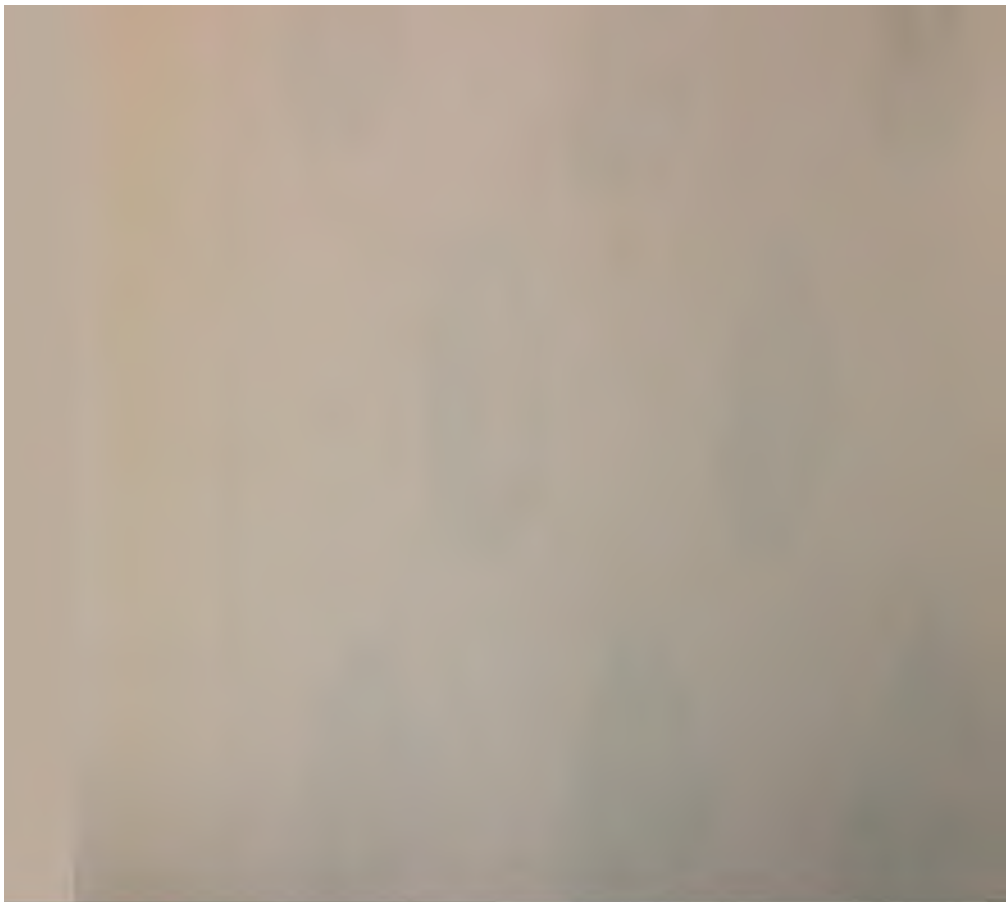
- FIG. 1. *Rocheportia conveza* Gould, cotype, length 4.2 mm., p. 199.
 2. *Rocheportia conveza* Gould, p. 199.
 3. *Scintilla turtoni*, new species, type, length 8.5 mm., p. 196.
 4. *Digitaria africana*, new species, type, length 3.7 mm., p. 194.
 5. *Rocheportia enora*, new species, type, length 3.8 mm., p. 200.
 6. *Erycina carifa*, new species, type, length 3.5 mm., p. 197.
 7. *Abra africana*, new species, type, length 5 mm., p. 206.
 8. *Theora alfredensis*, new species, type, length 9.2 mm., p. 206.

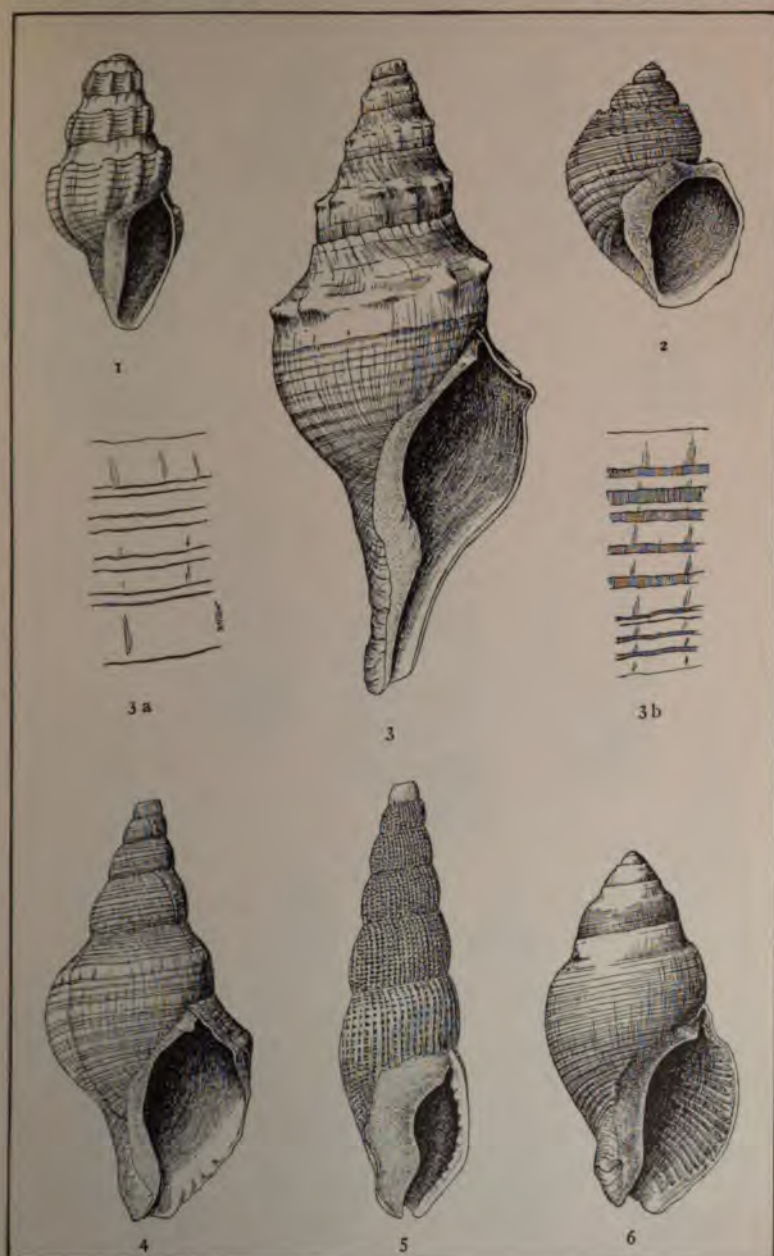




SOUTH AFRICAN MARINE MOLLUSKS.

FOR EXPLANATION OF PLATE SEE PAGE 257.

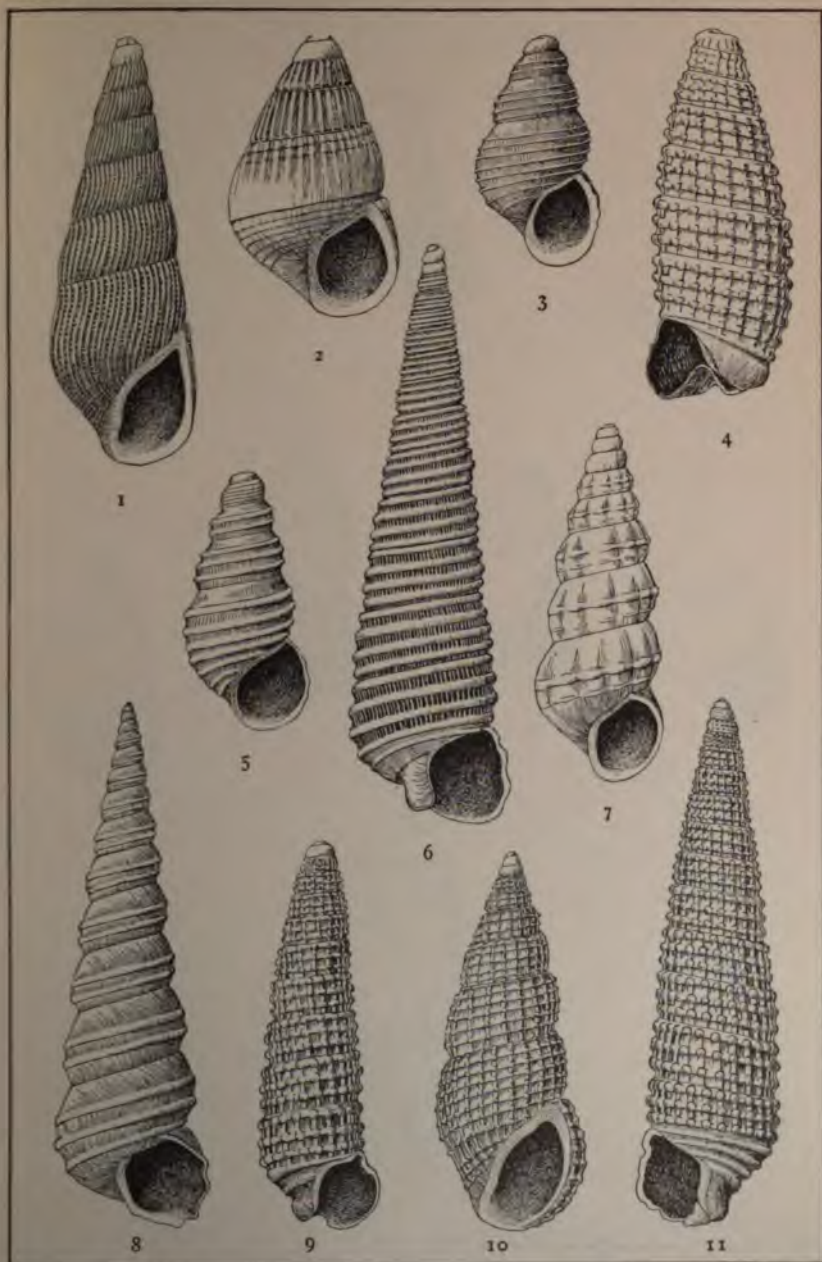




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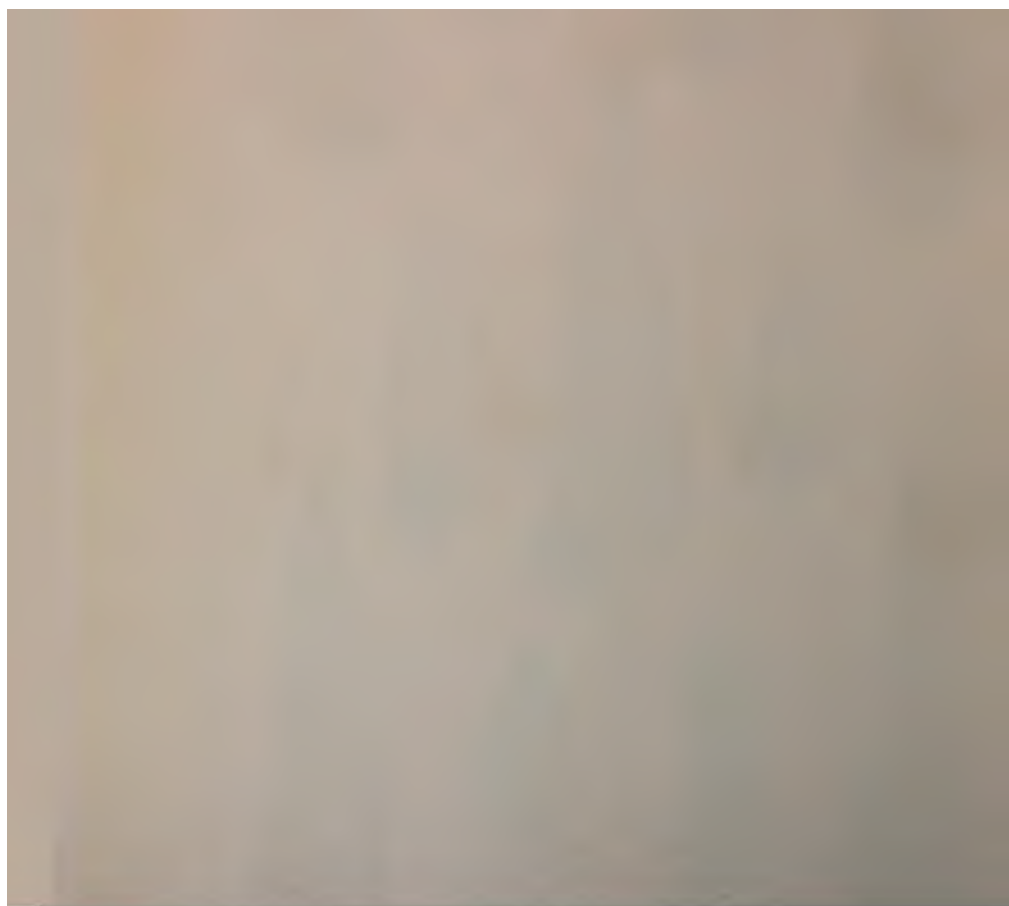
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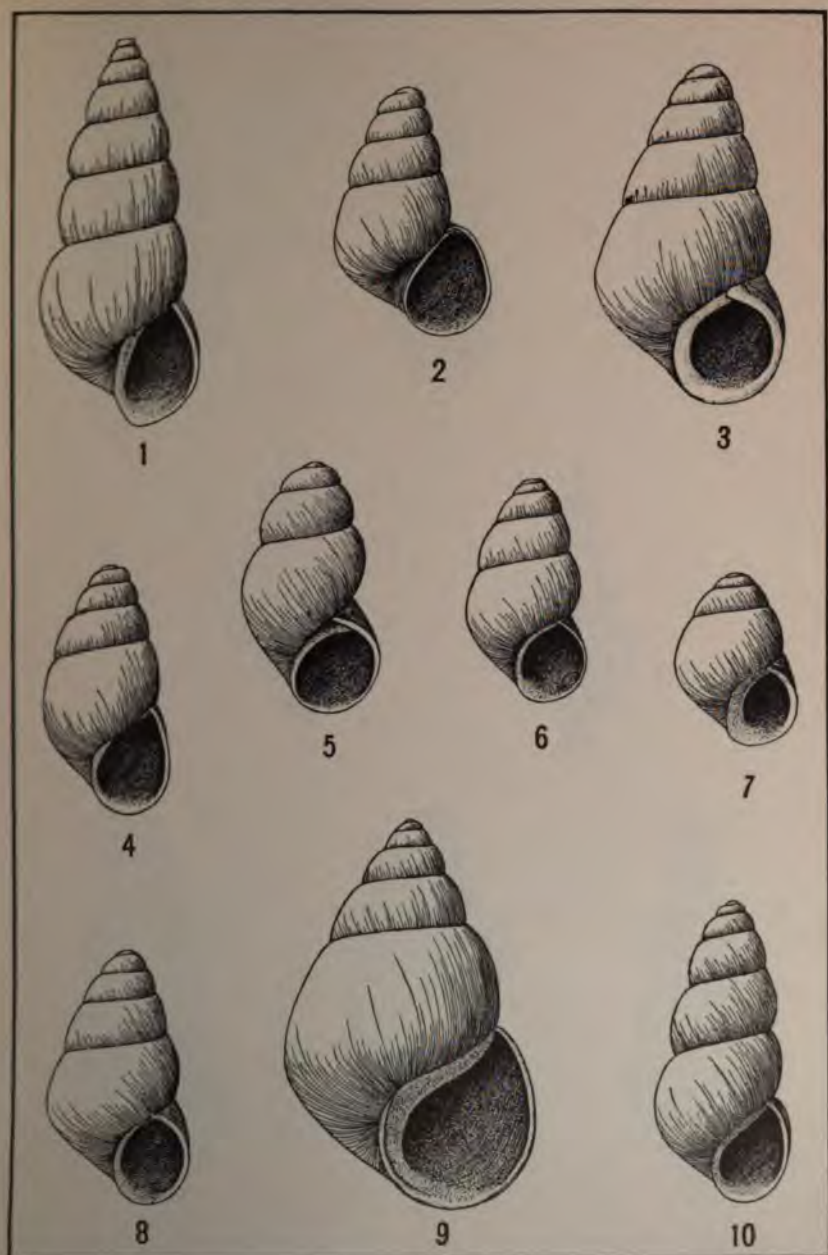




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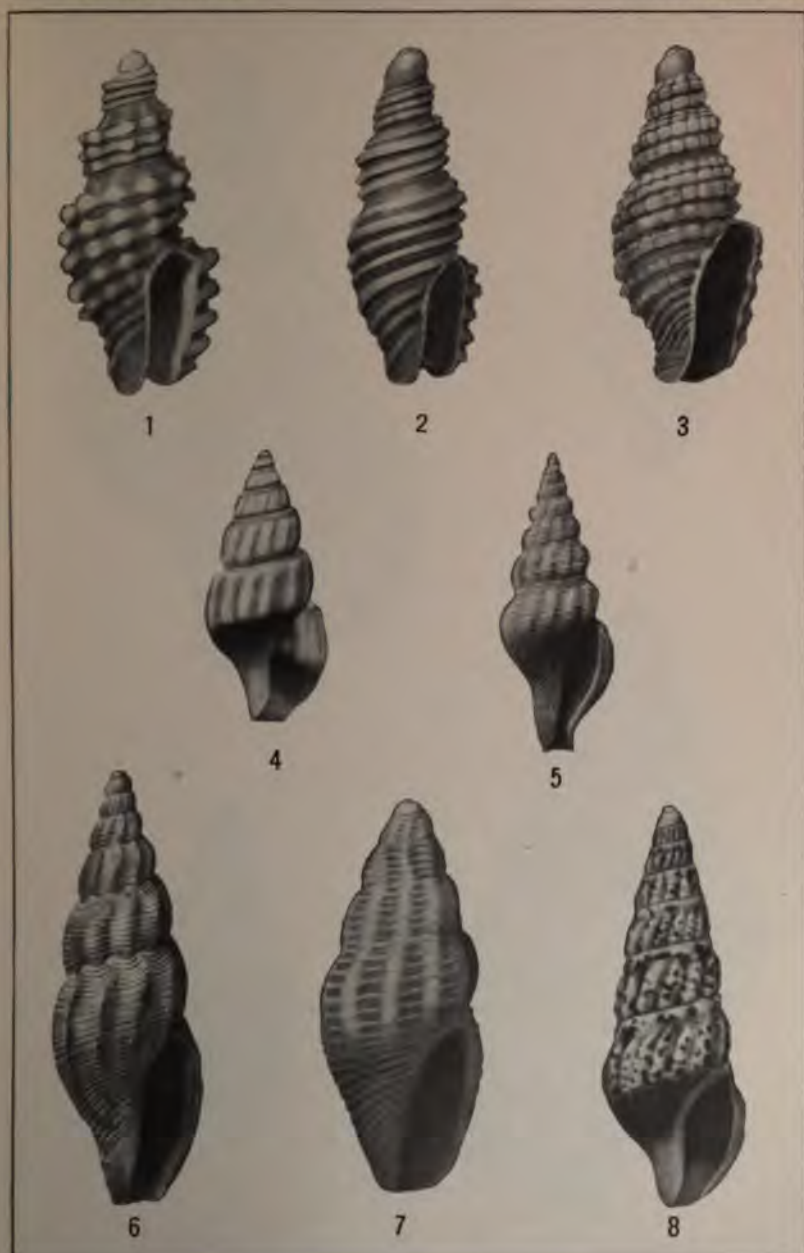
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SOUTH AFRICAN MARINE MOLLUSKS.

FOR EXPLANATION OF PLATE SEE PAGE 258.



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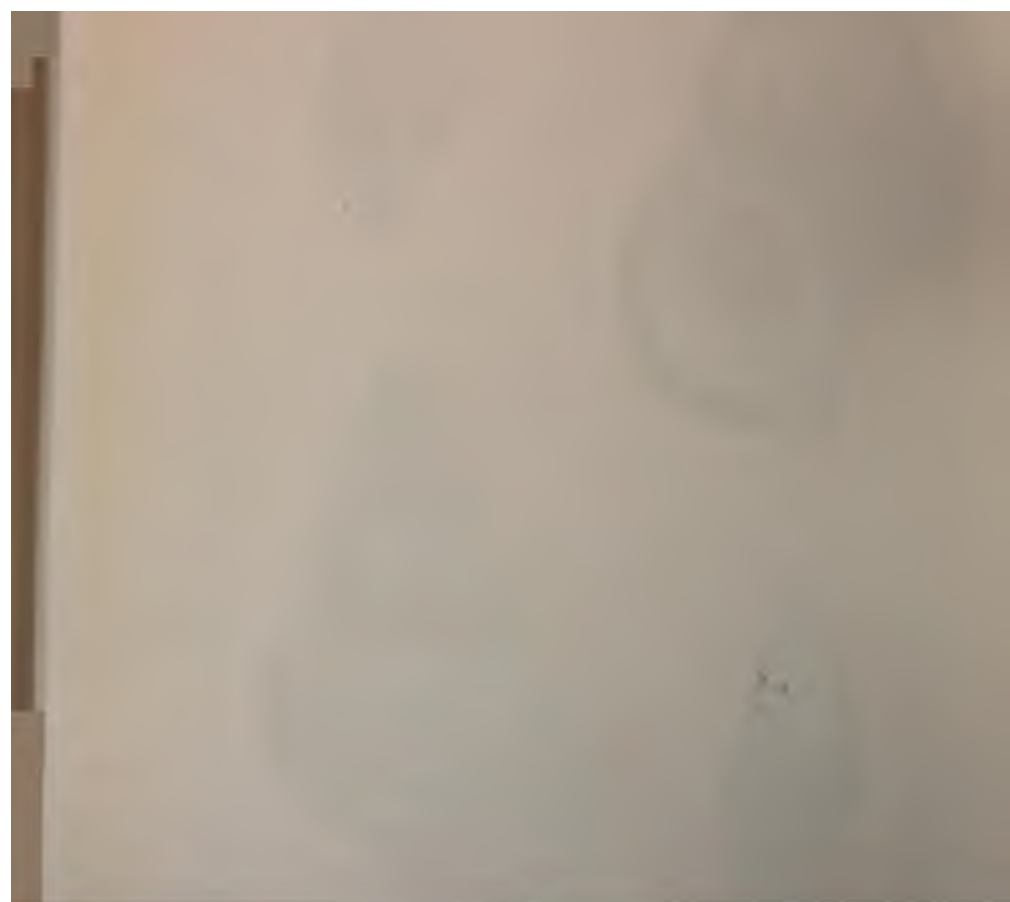
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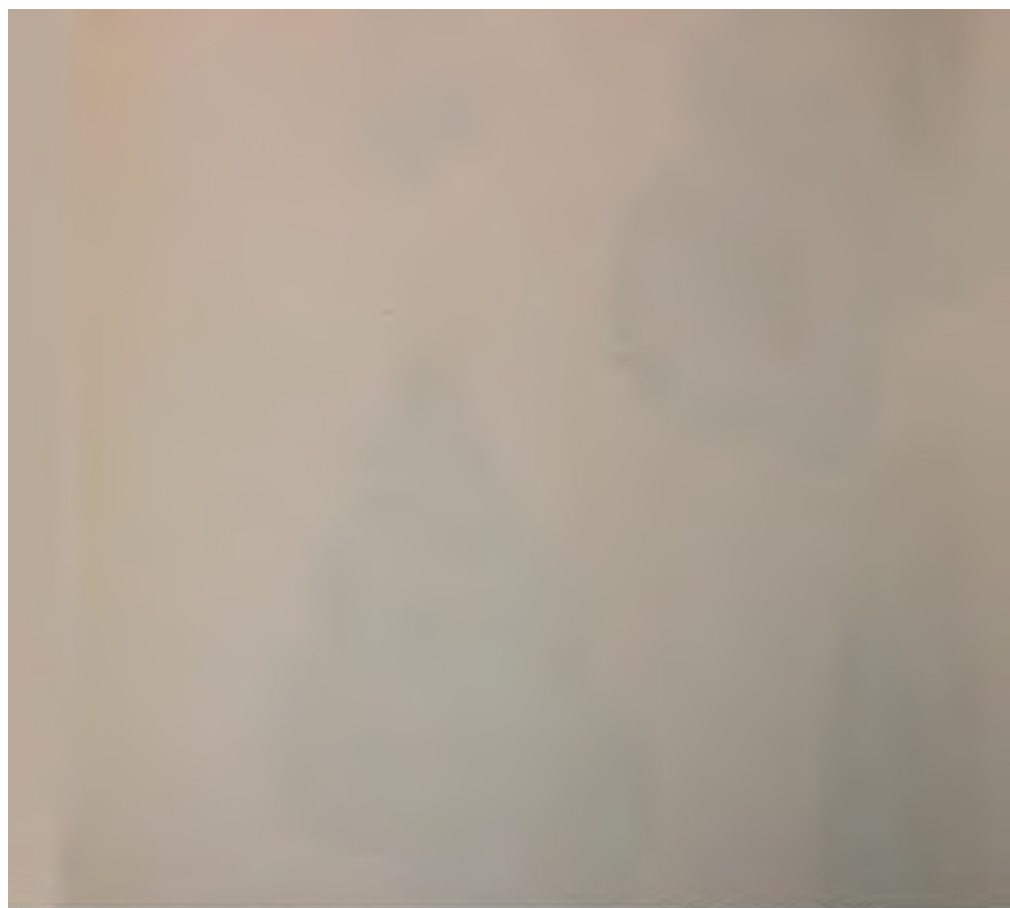
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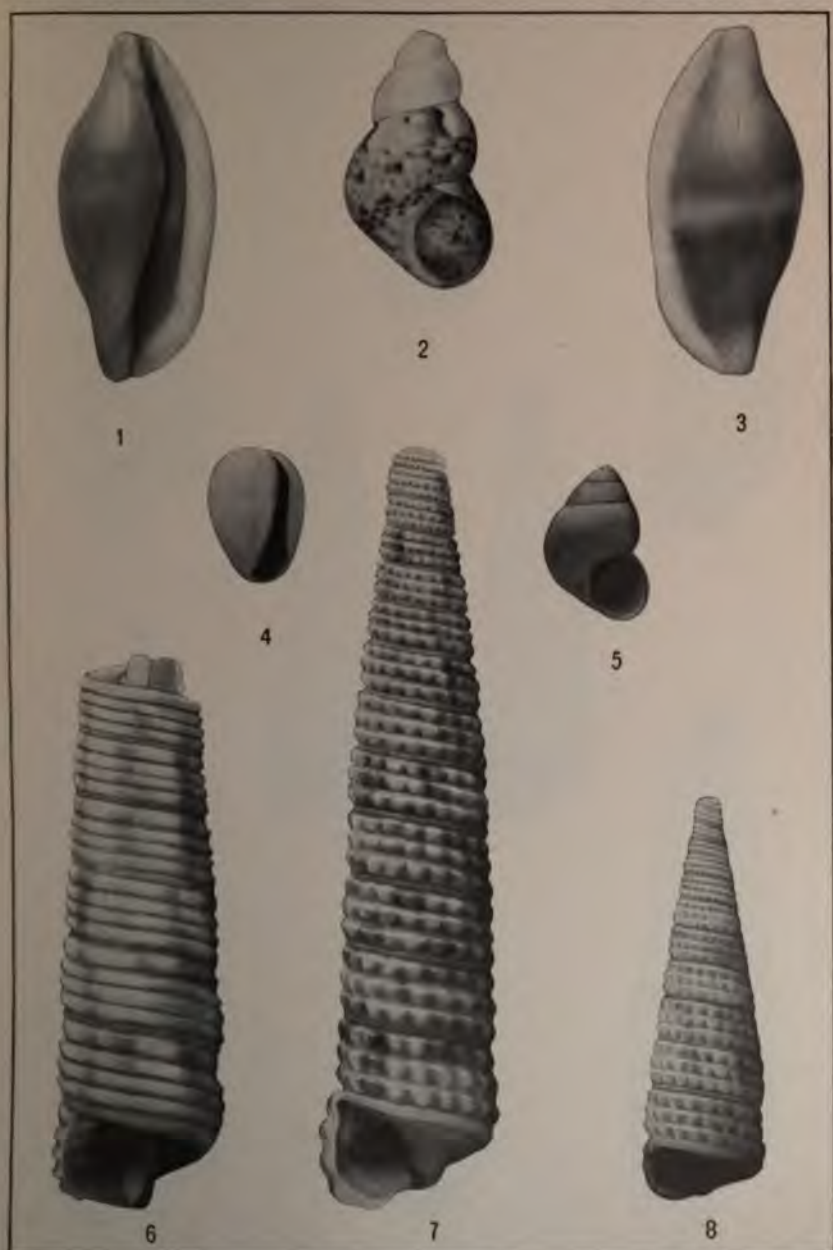




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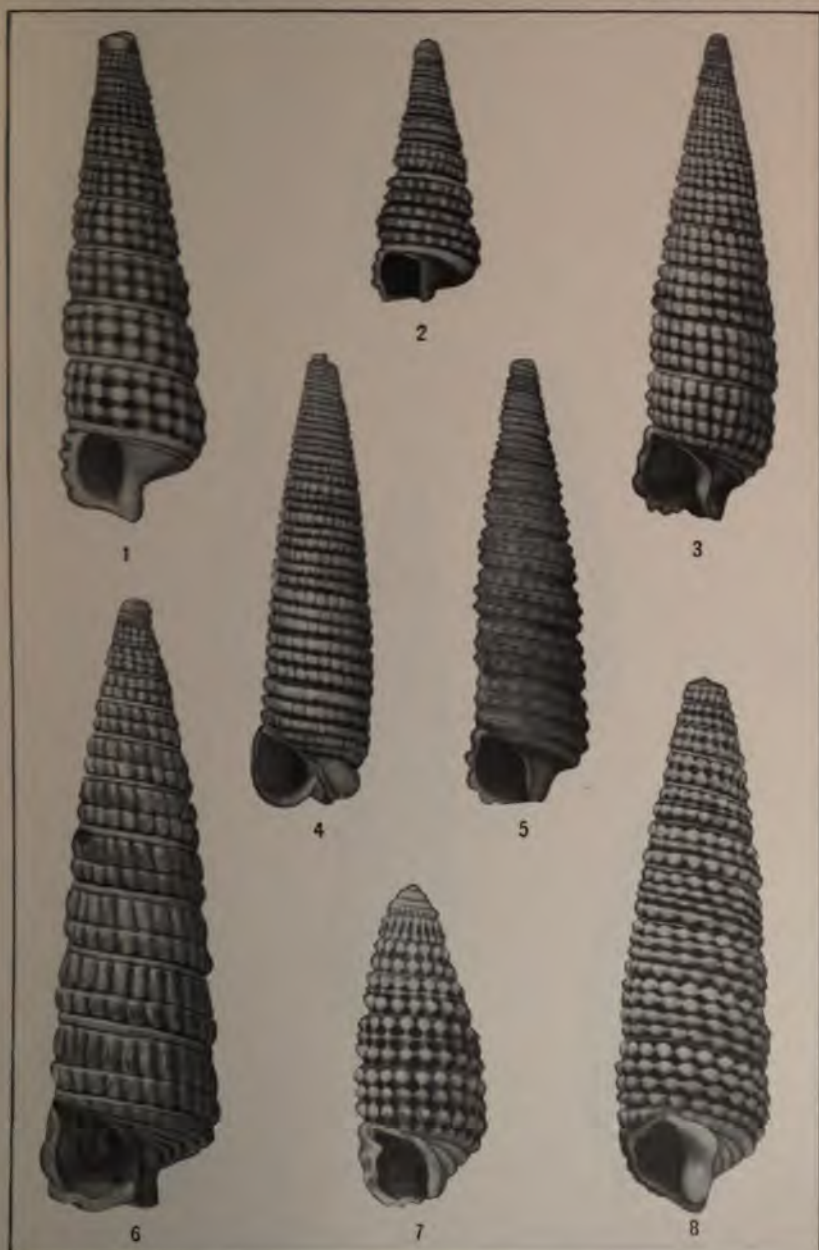




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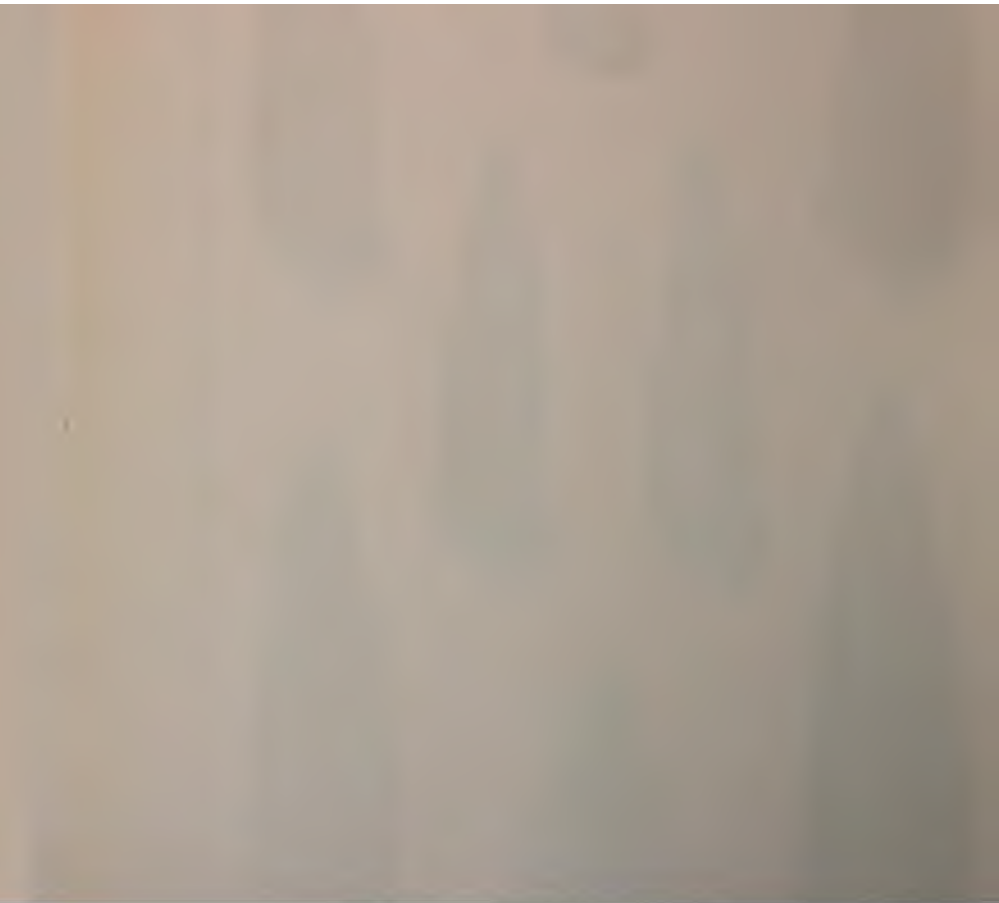
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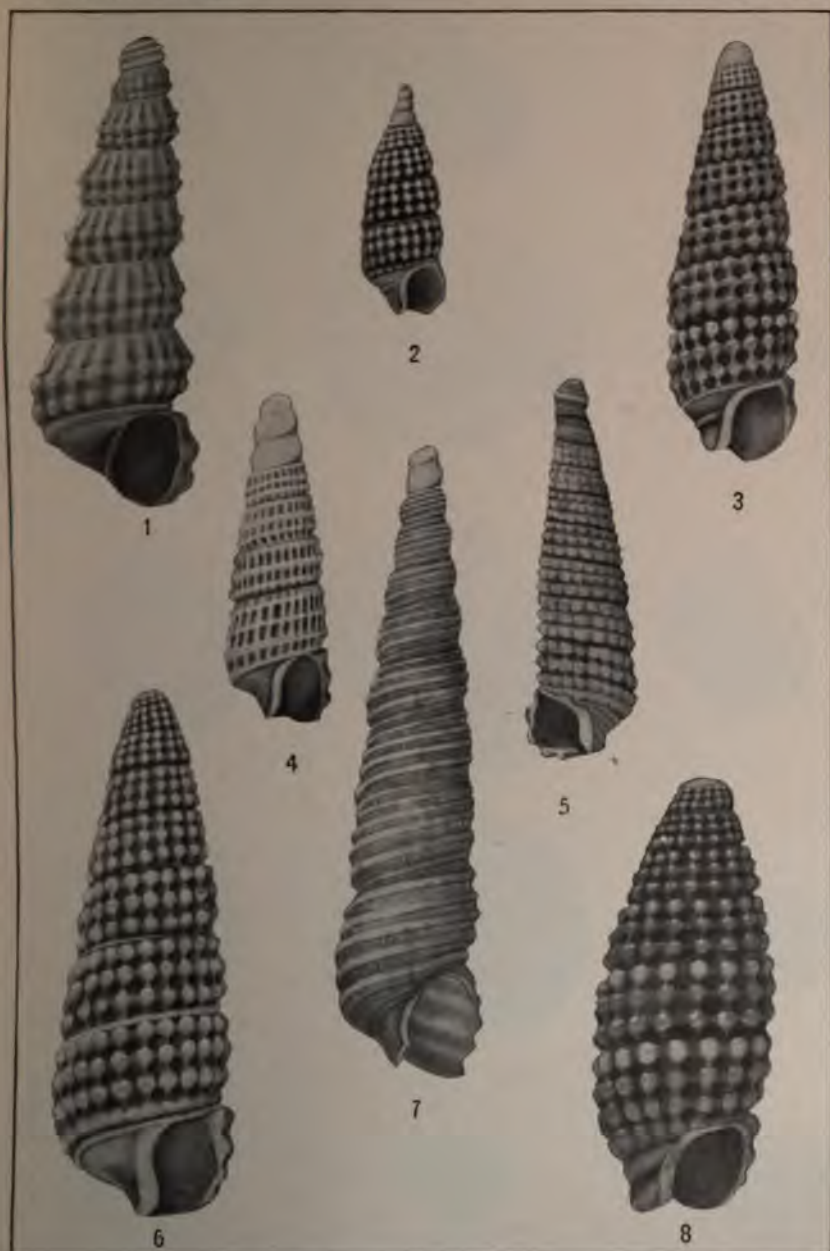




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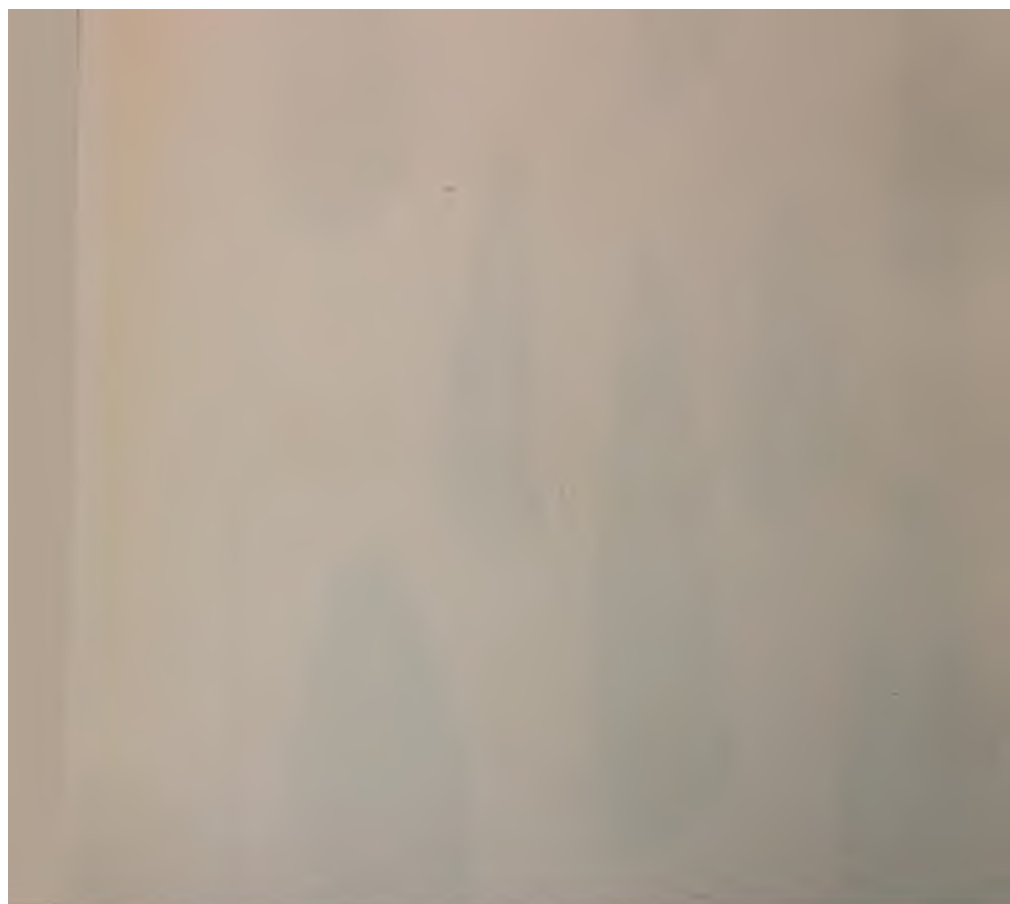
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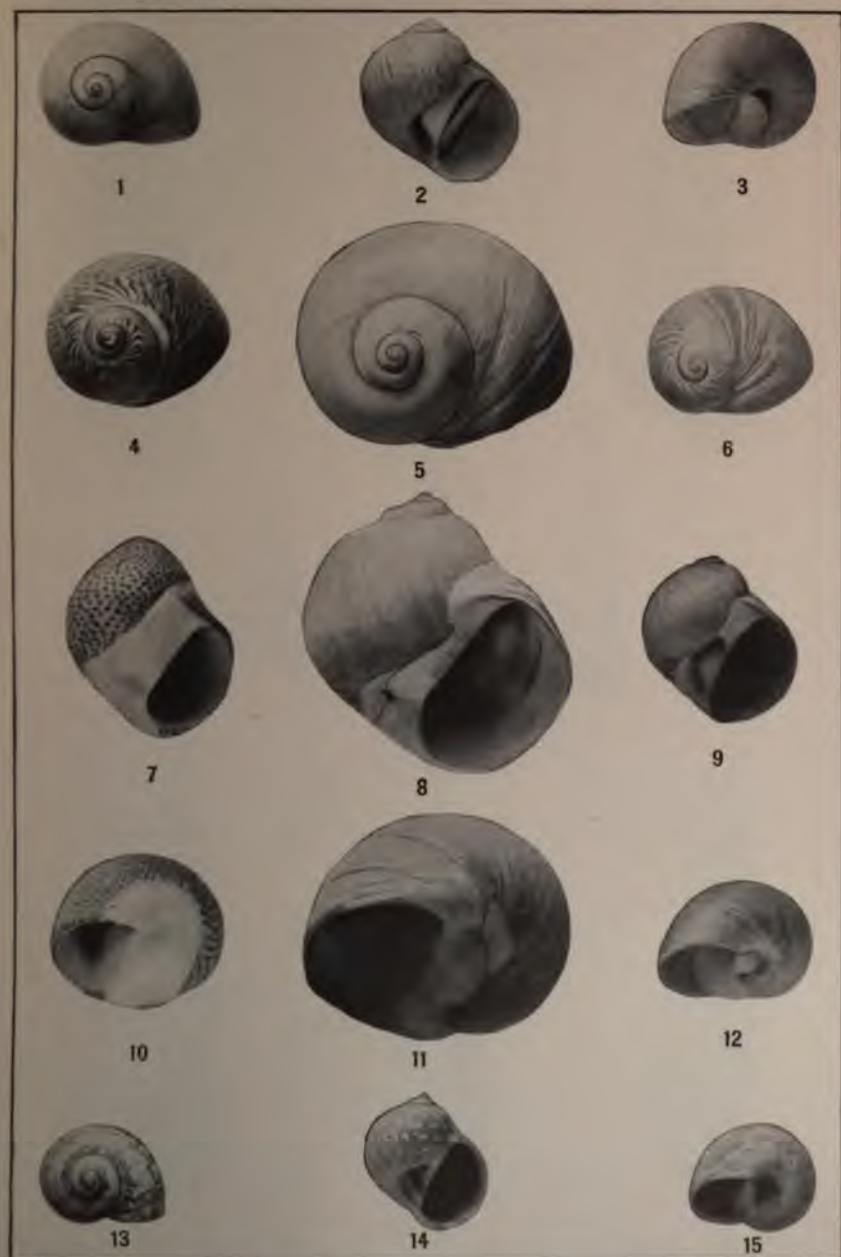




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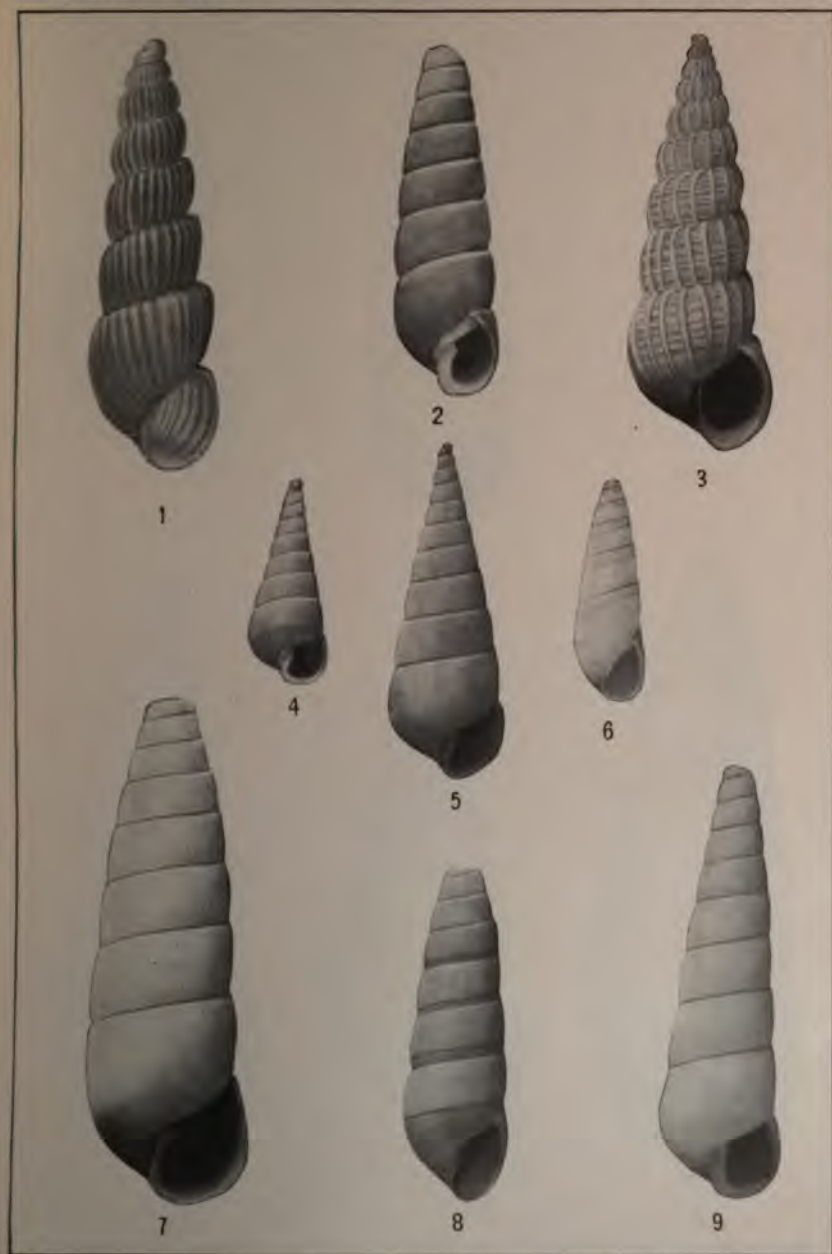




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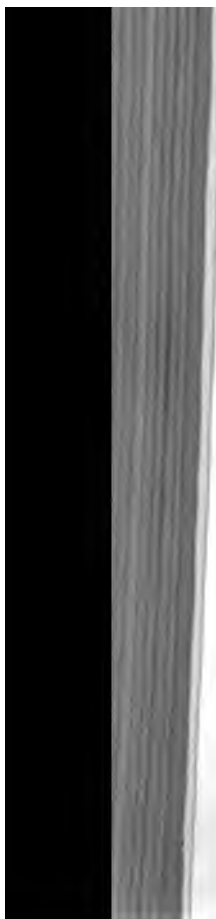
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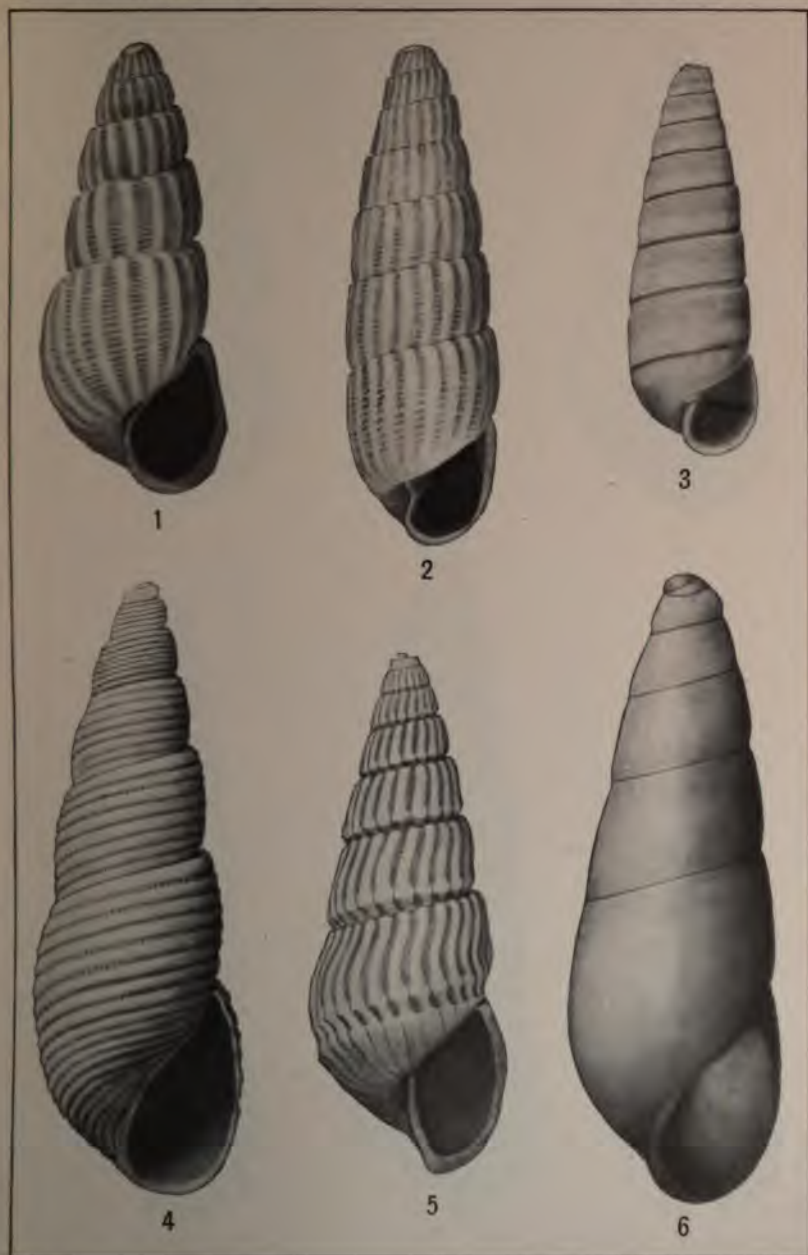




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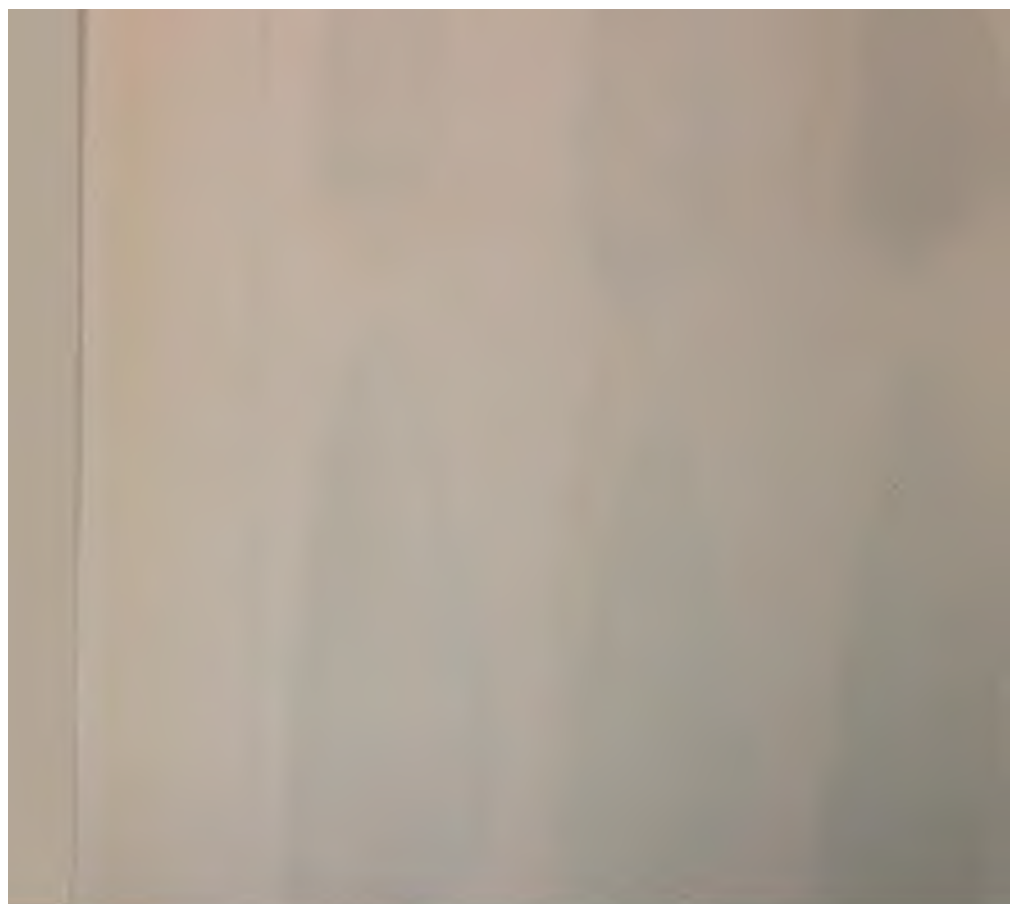
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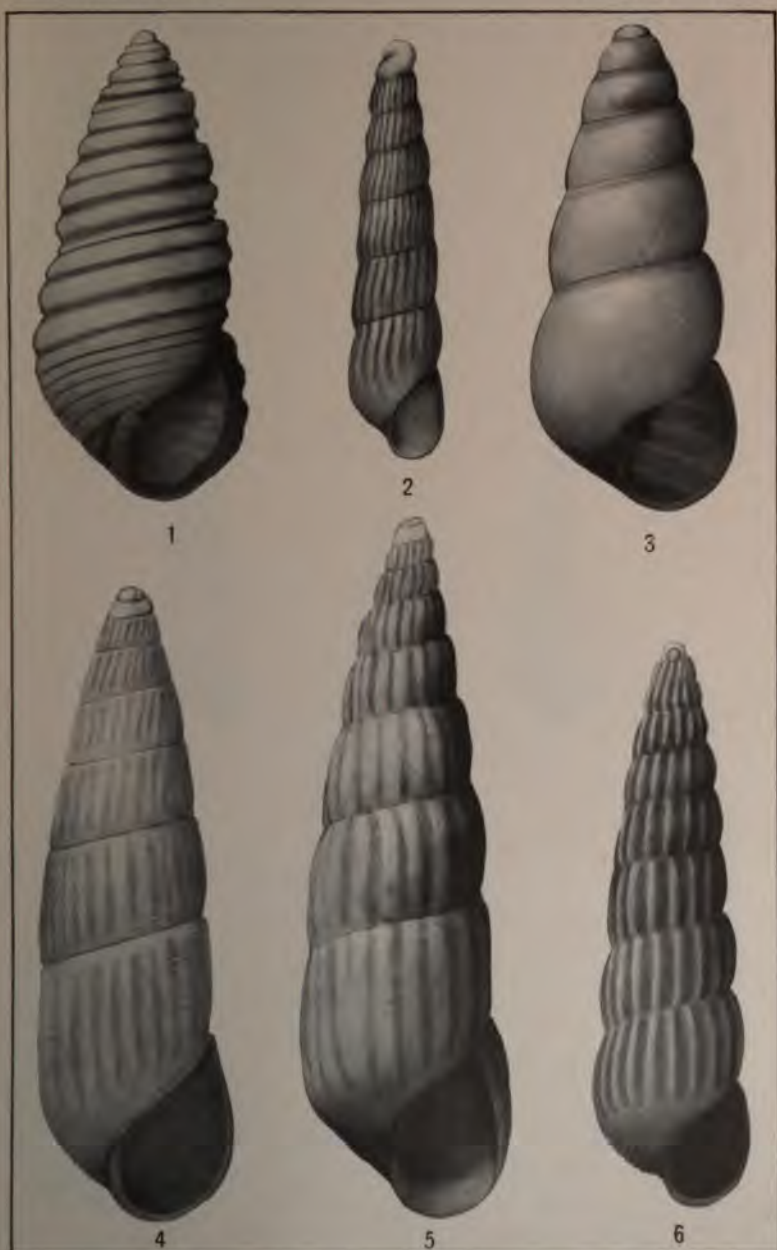




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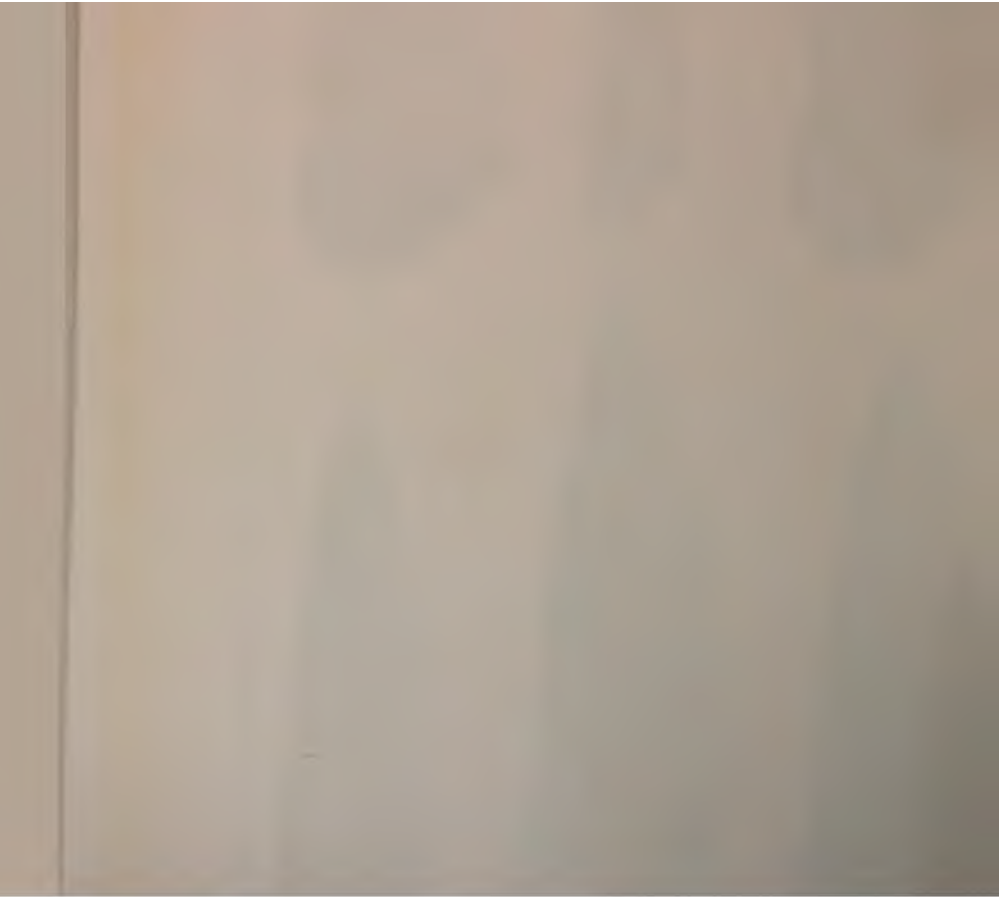
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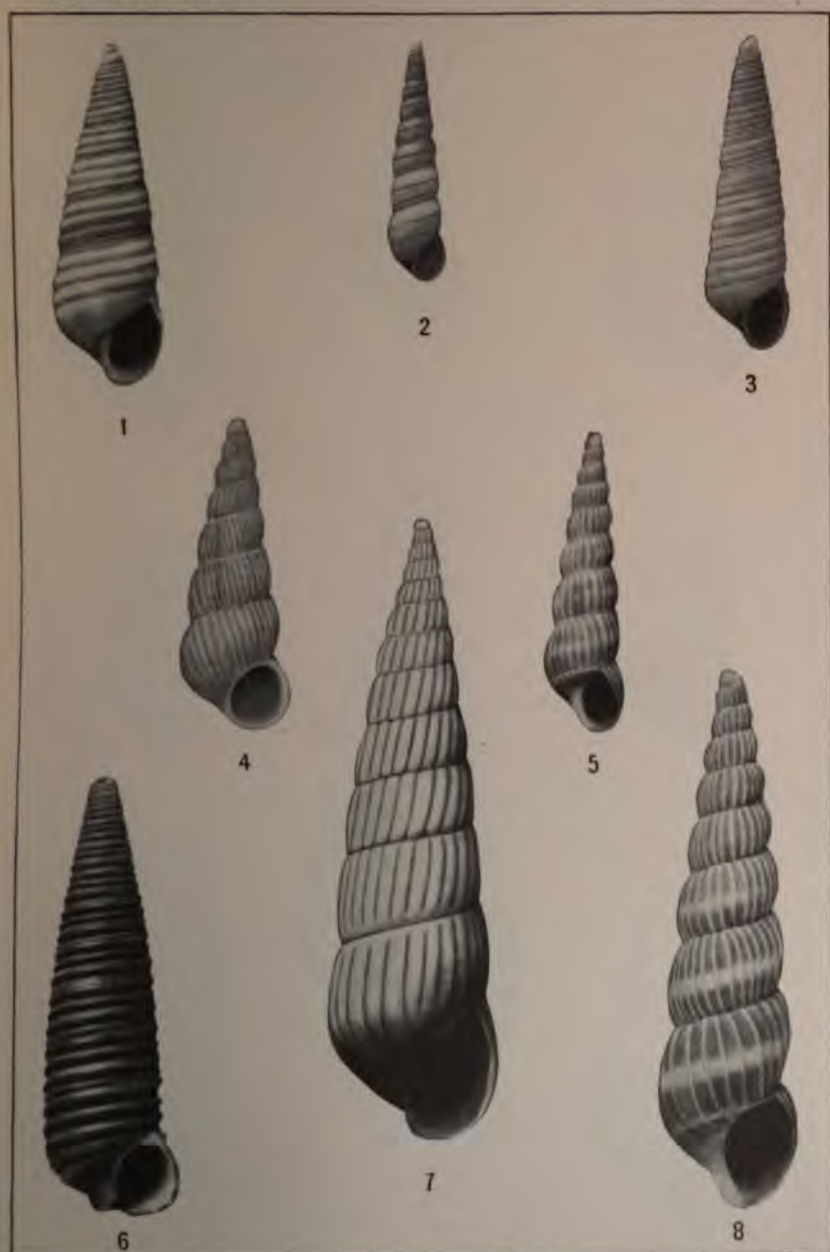




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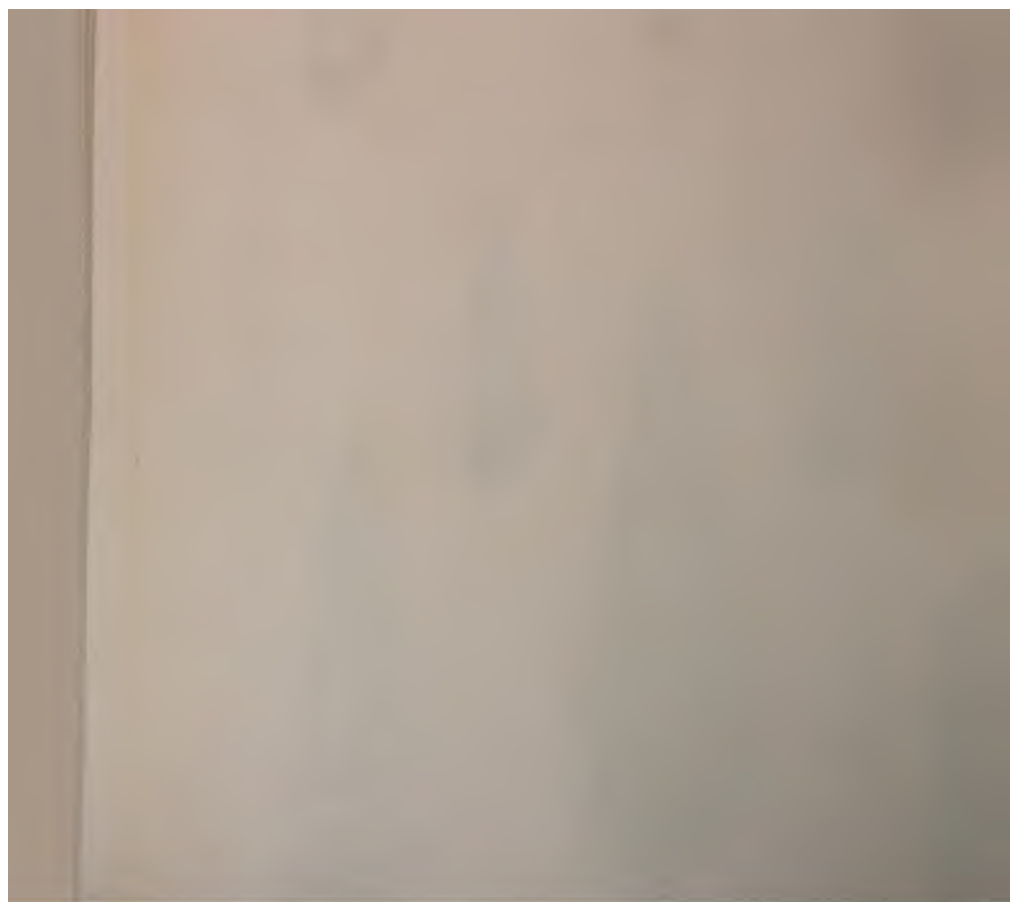
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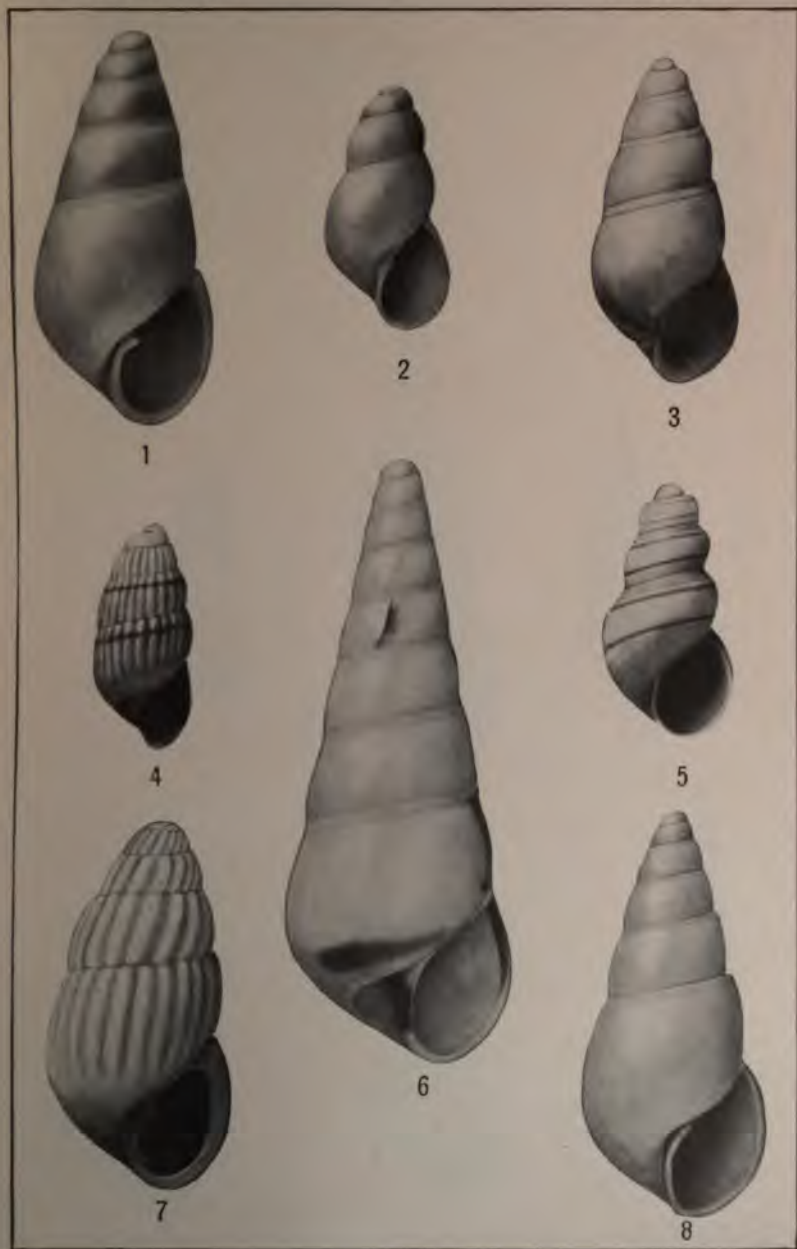




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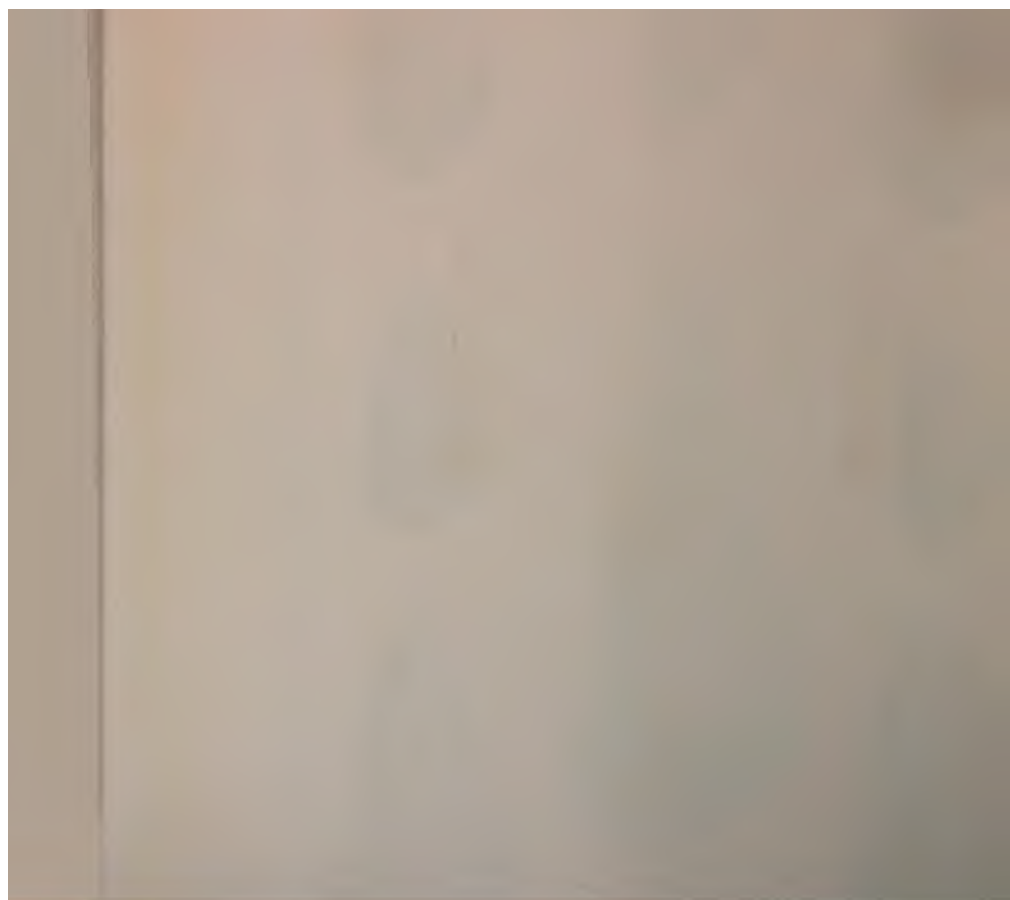
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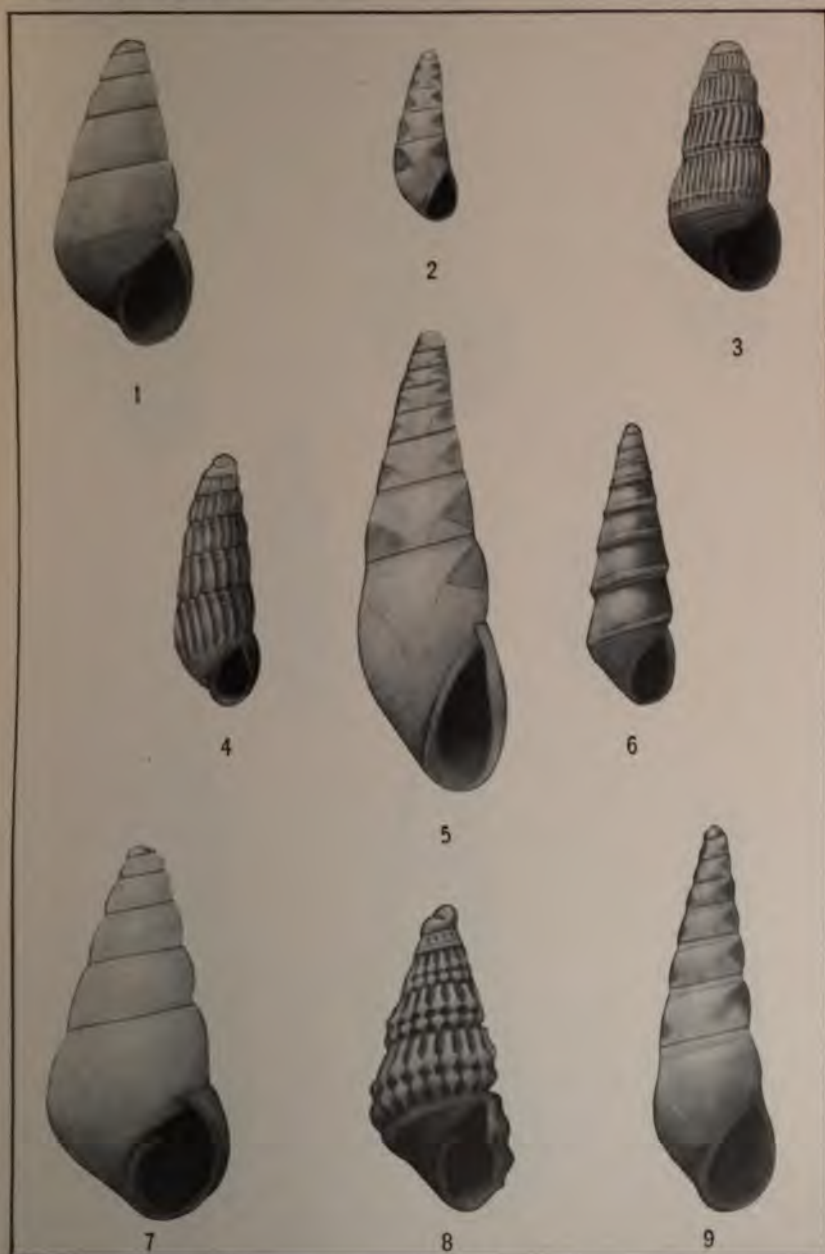




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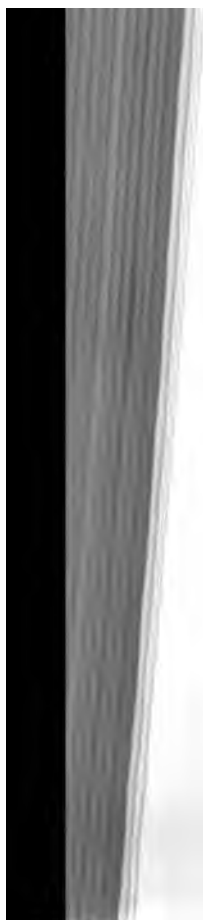
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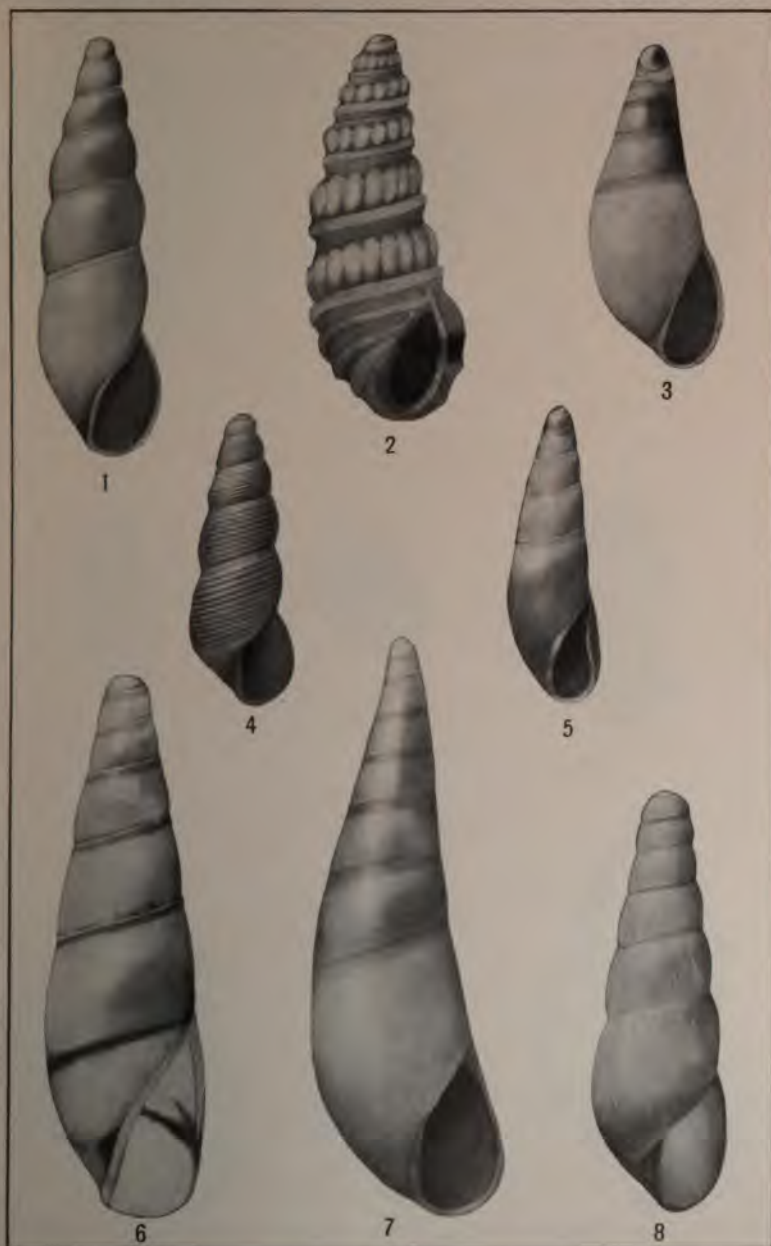




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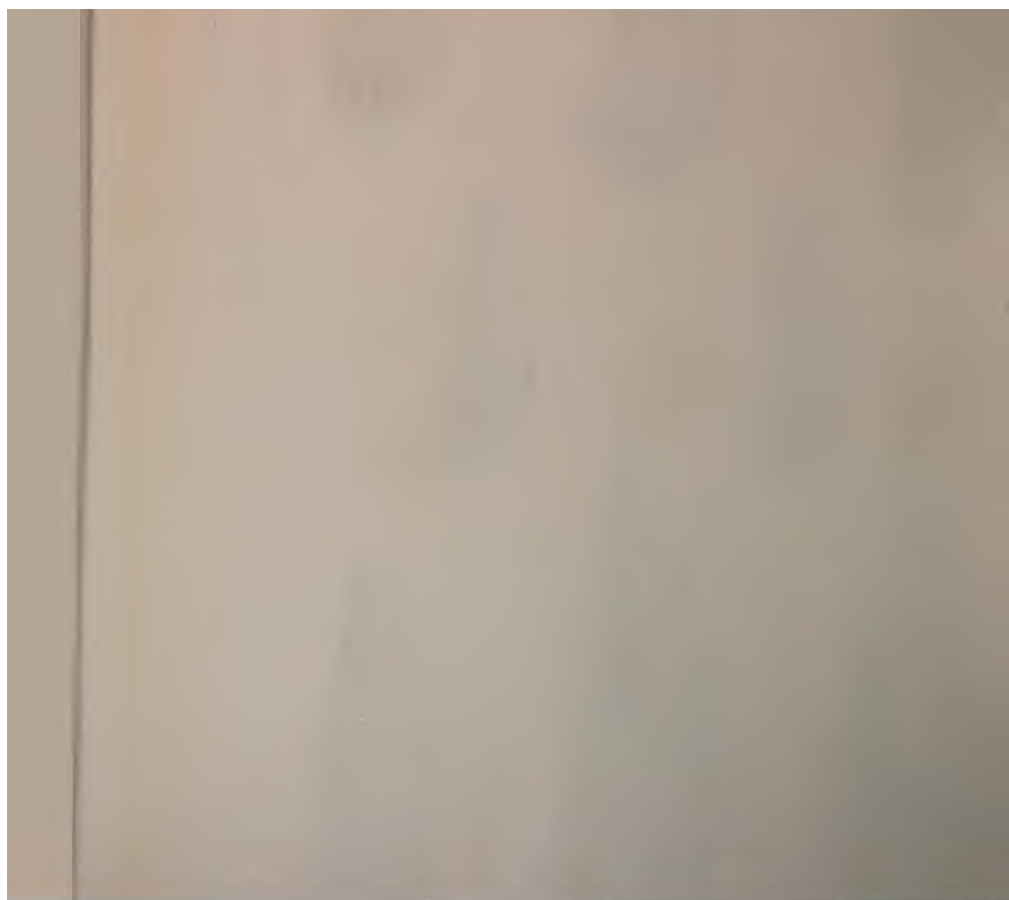
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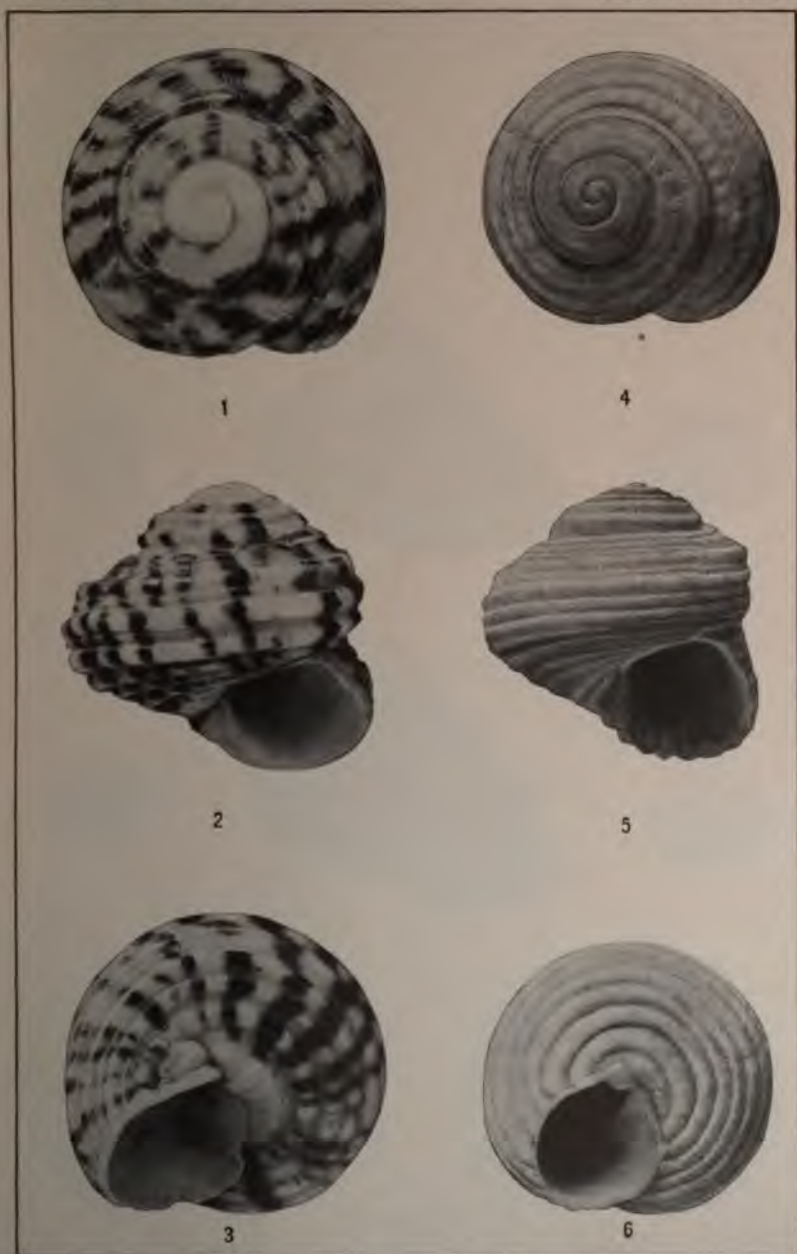




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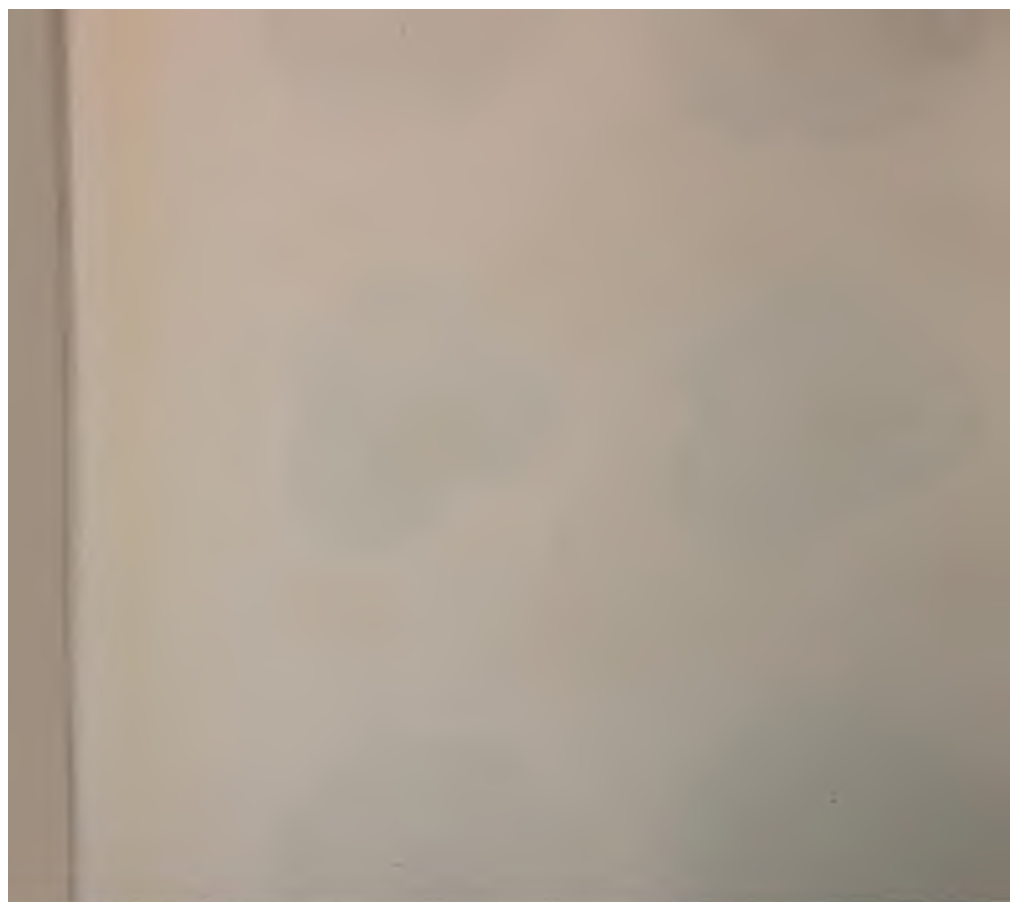
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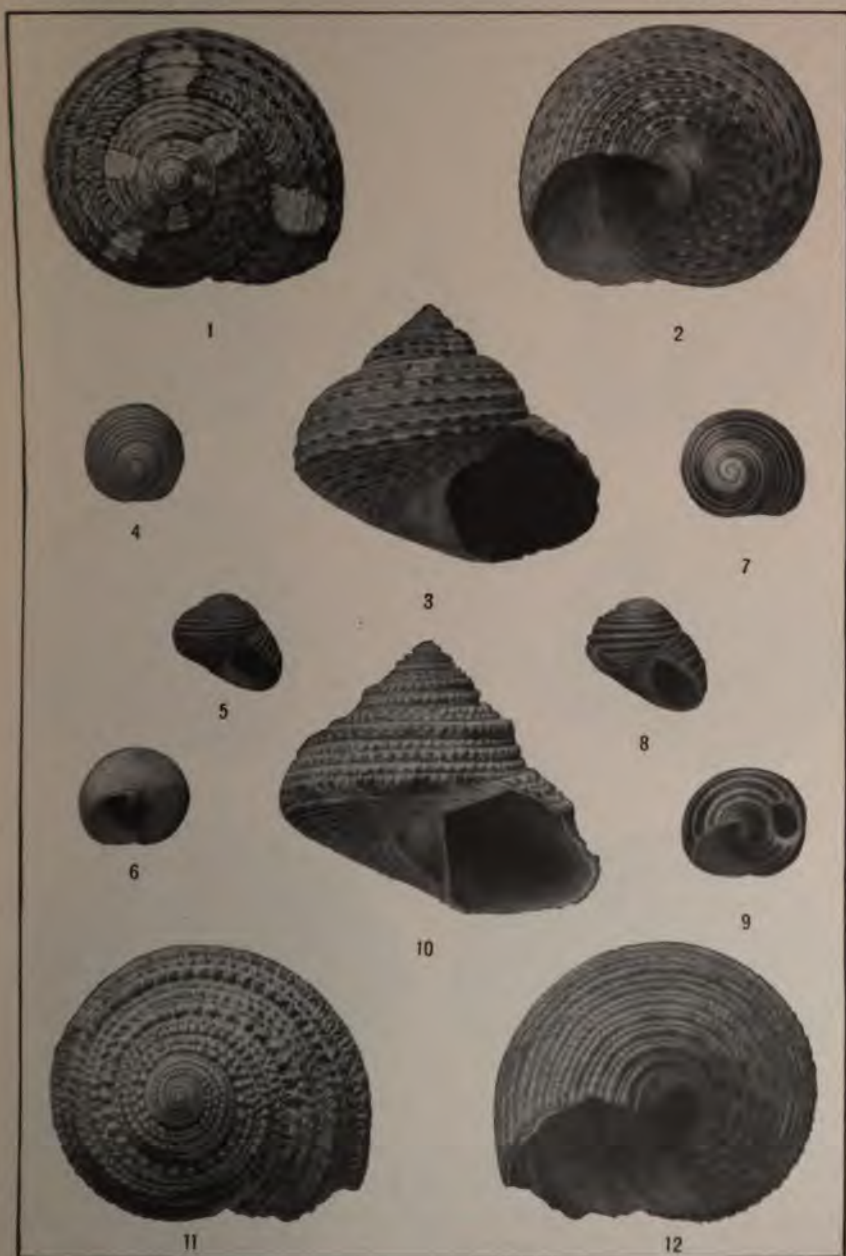




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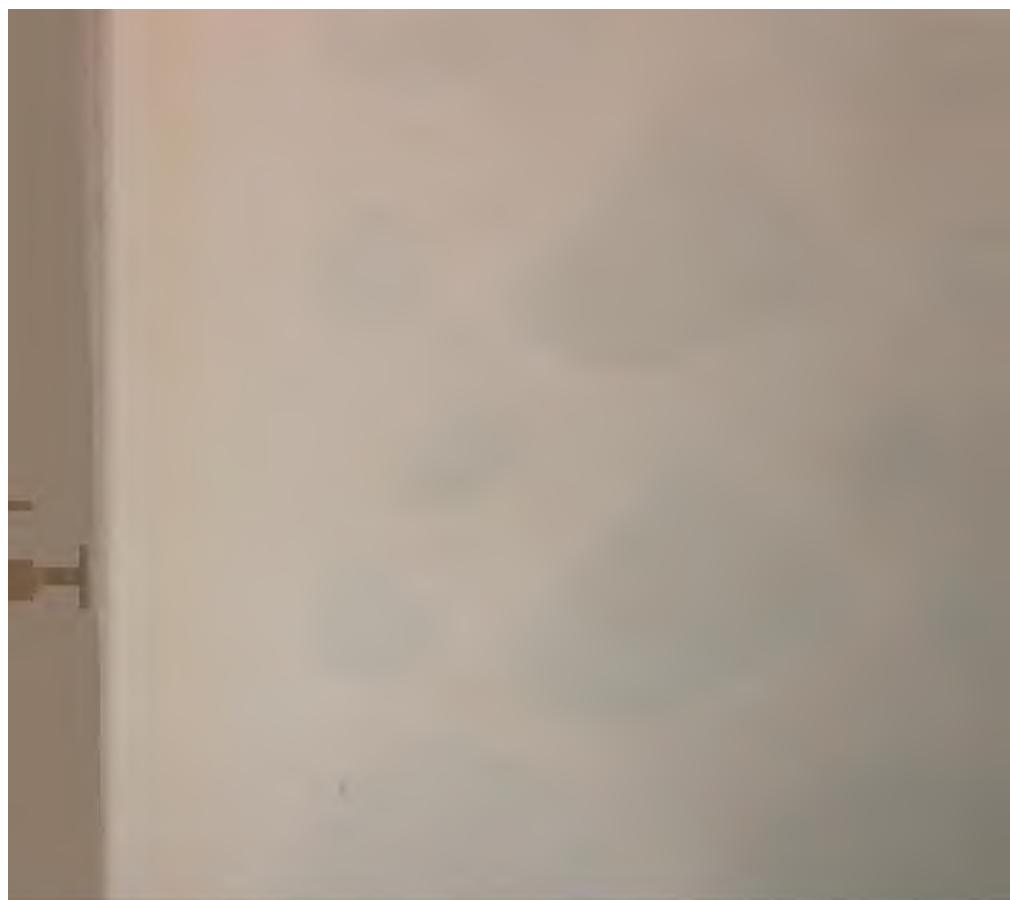
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FOR EXPLANATION OF PLATE SEE PAGE 261.

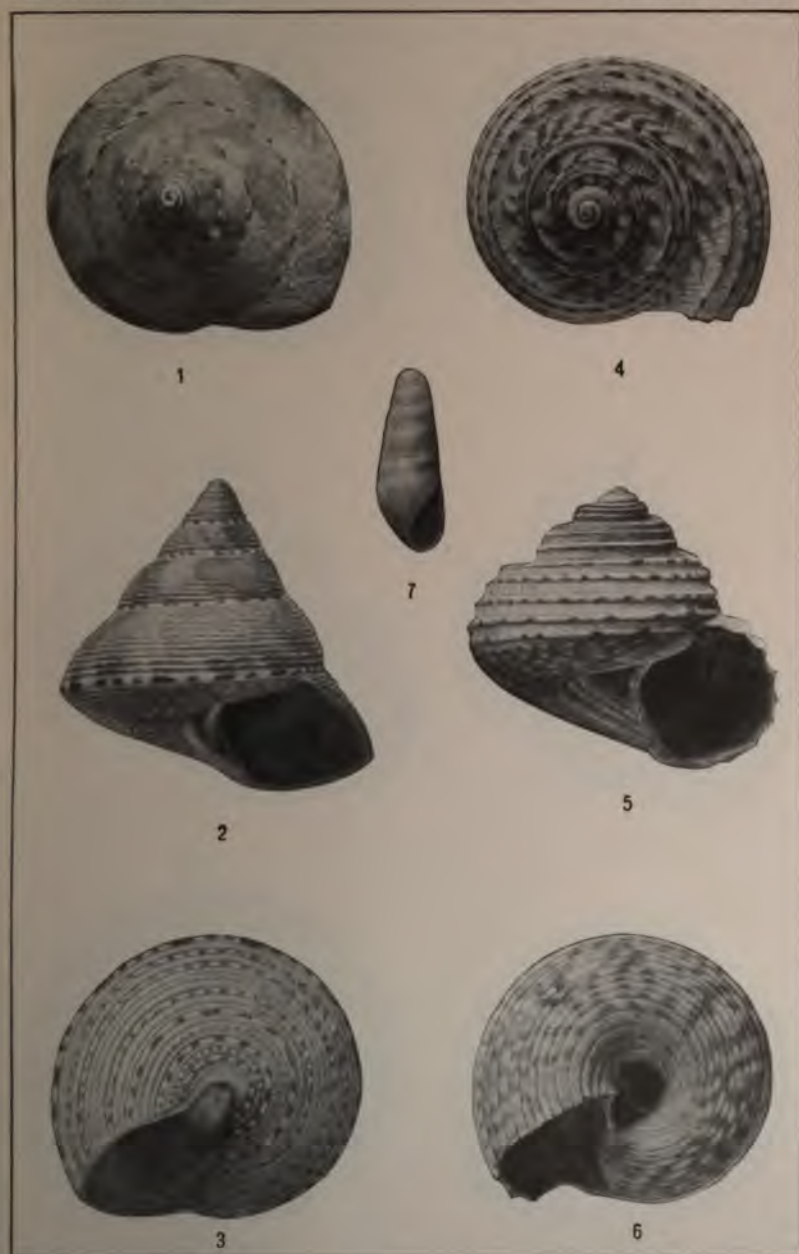




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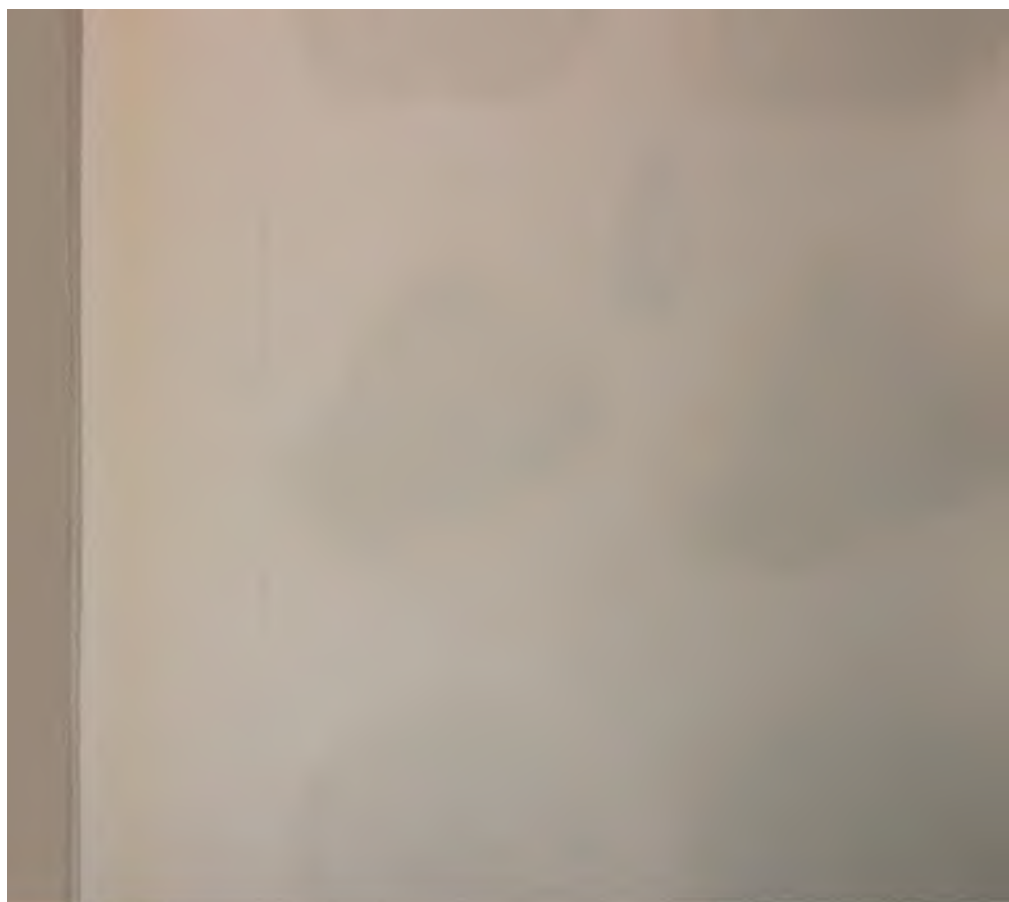
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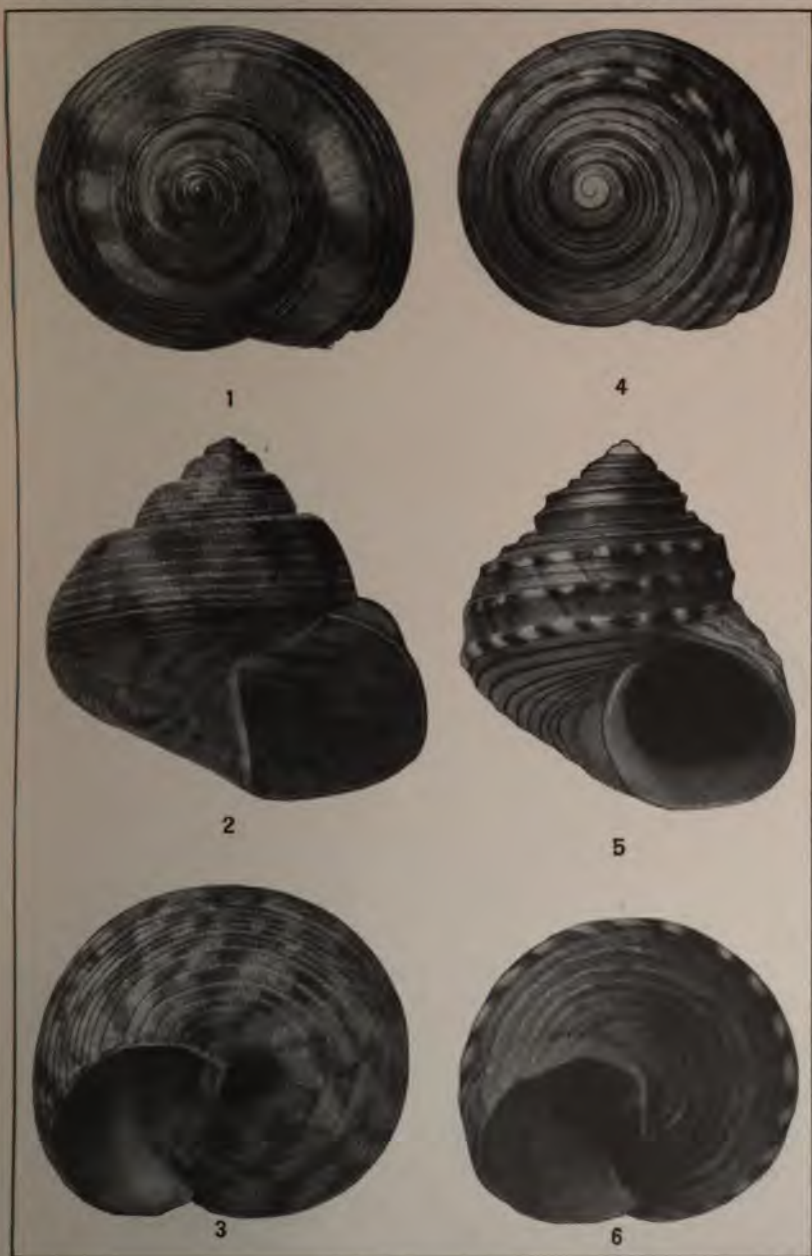




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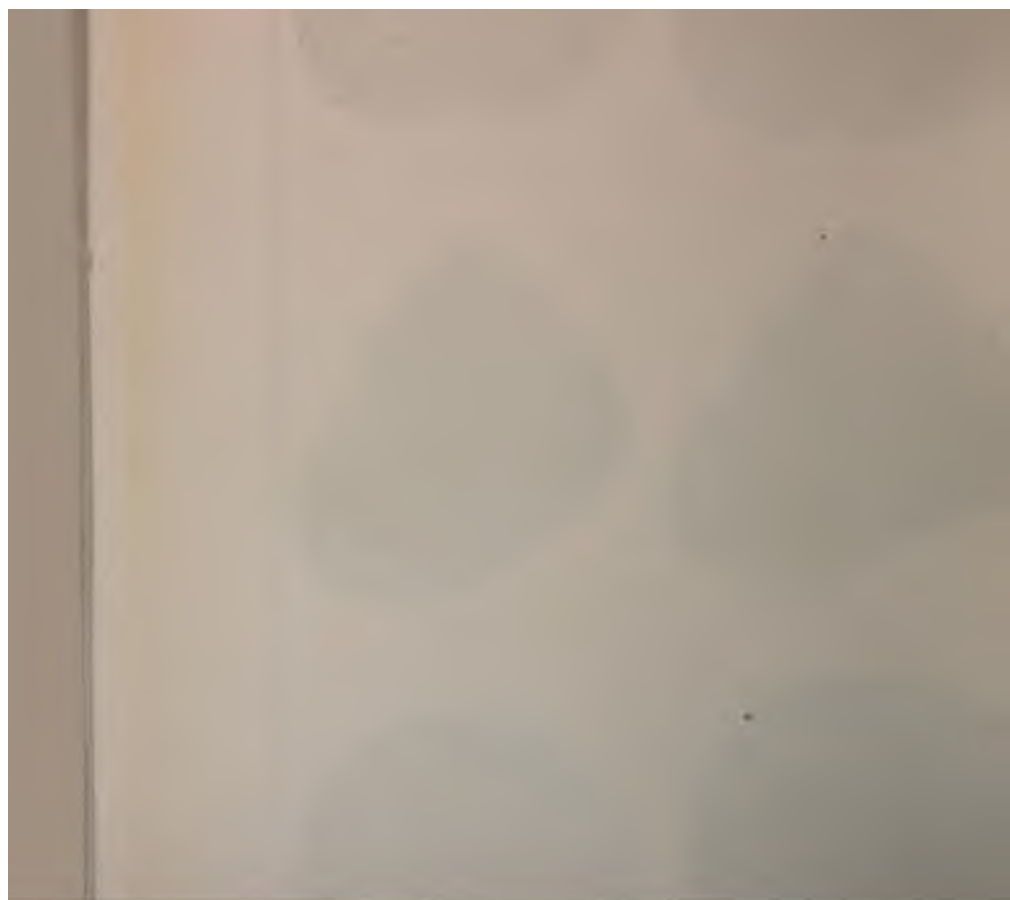
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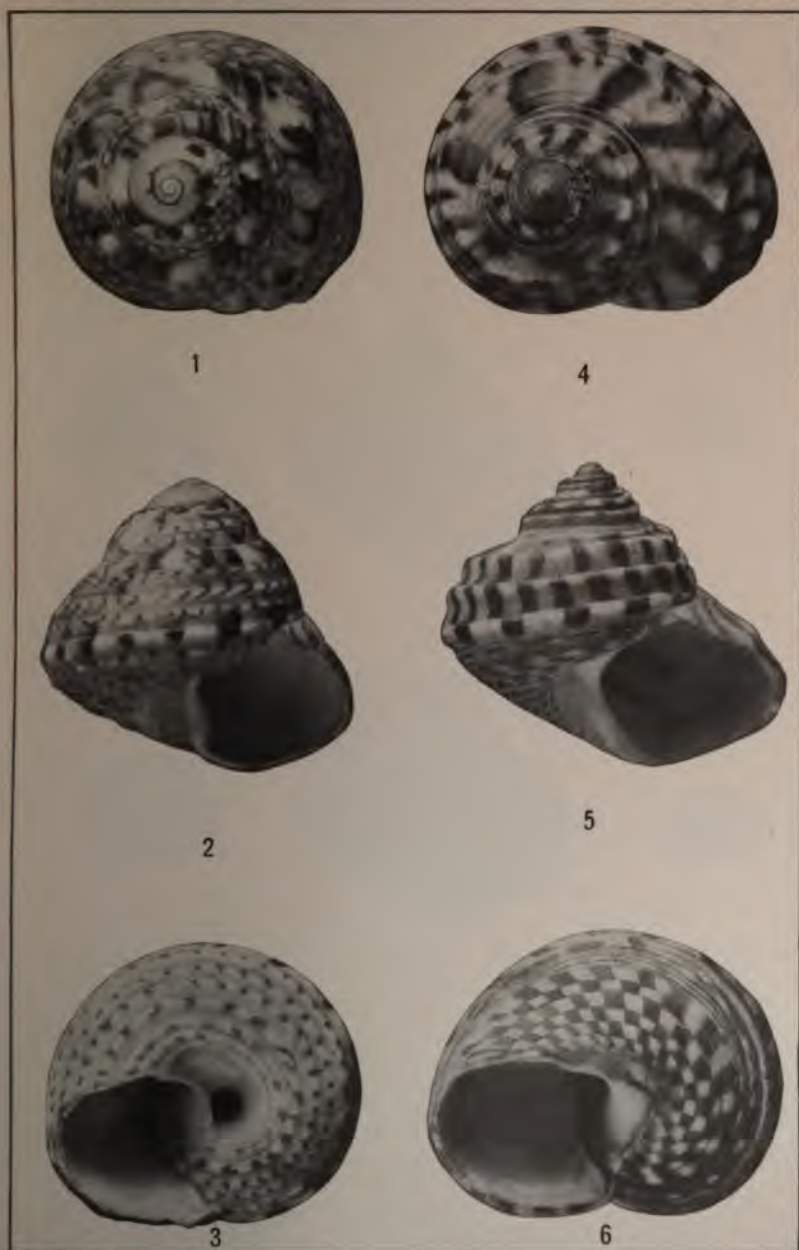




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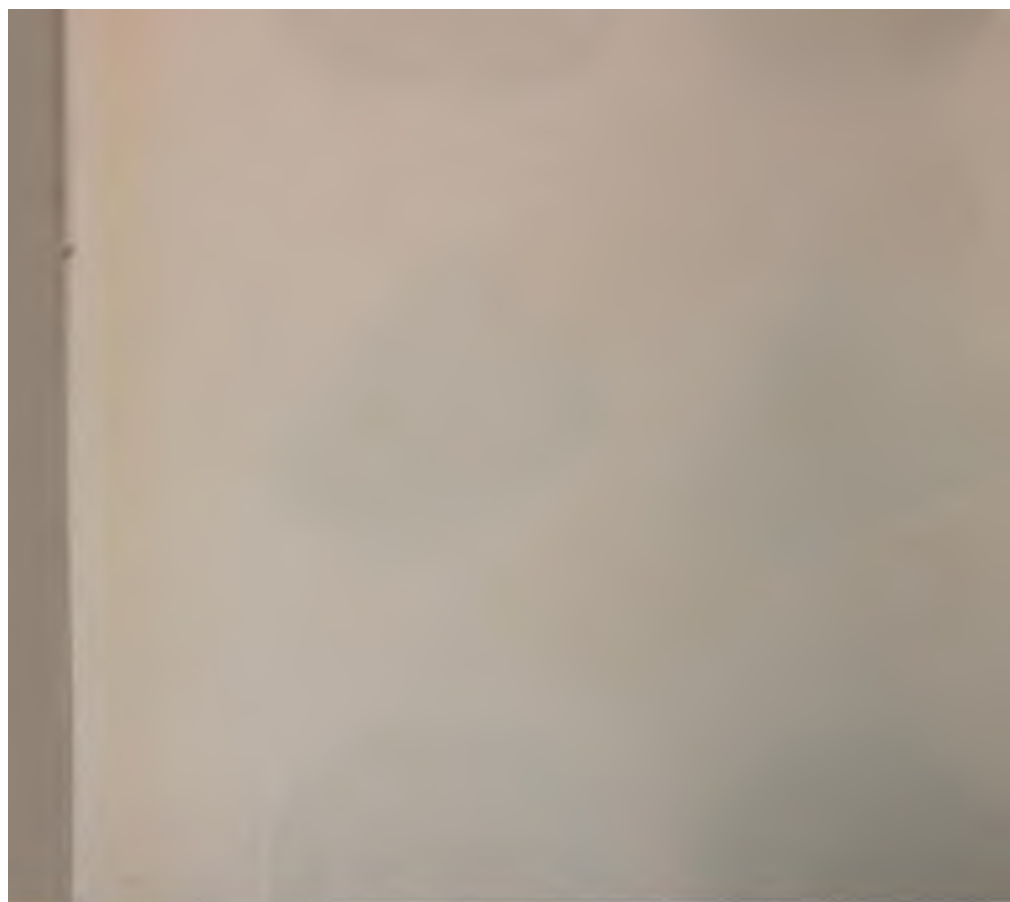
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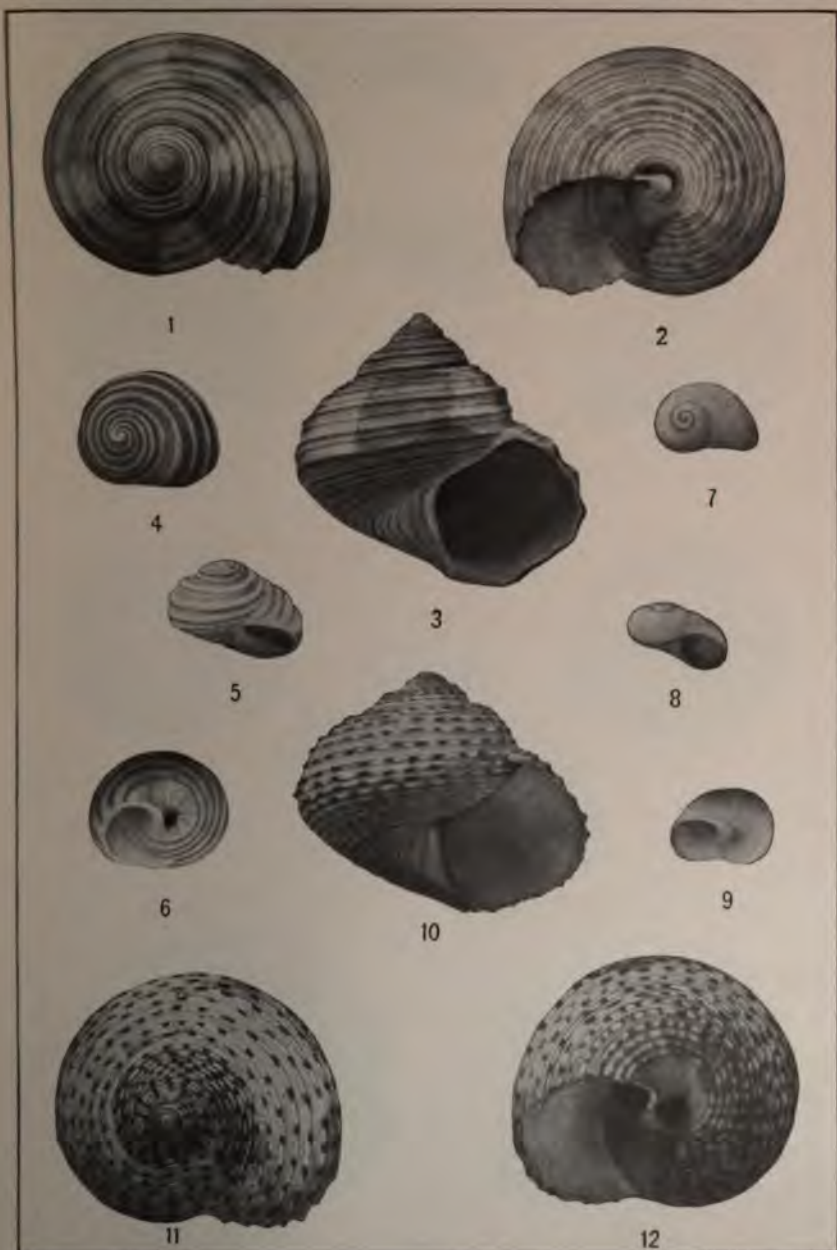




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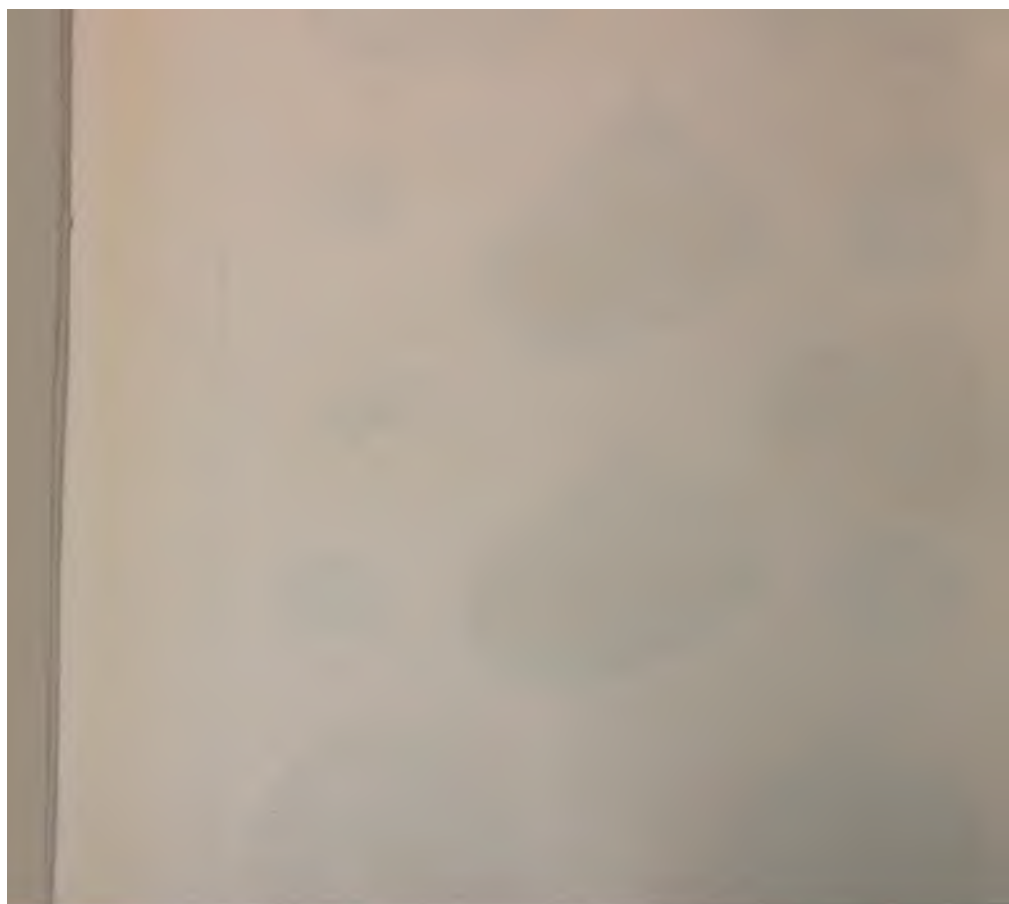
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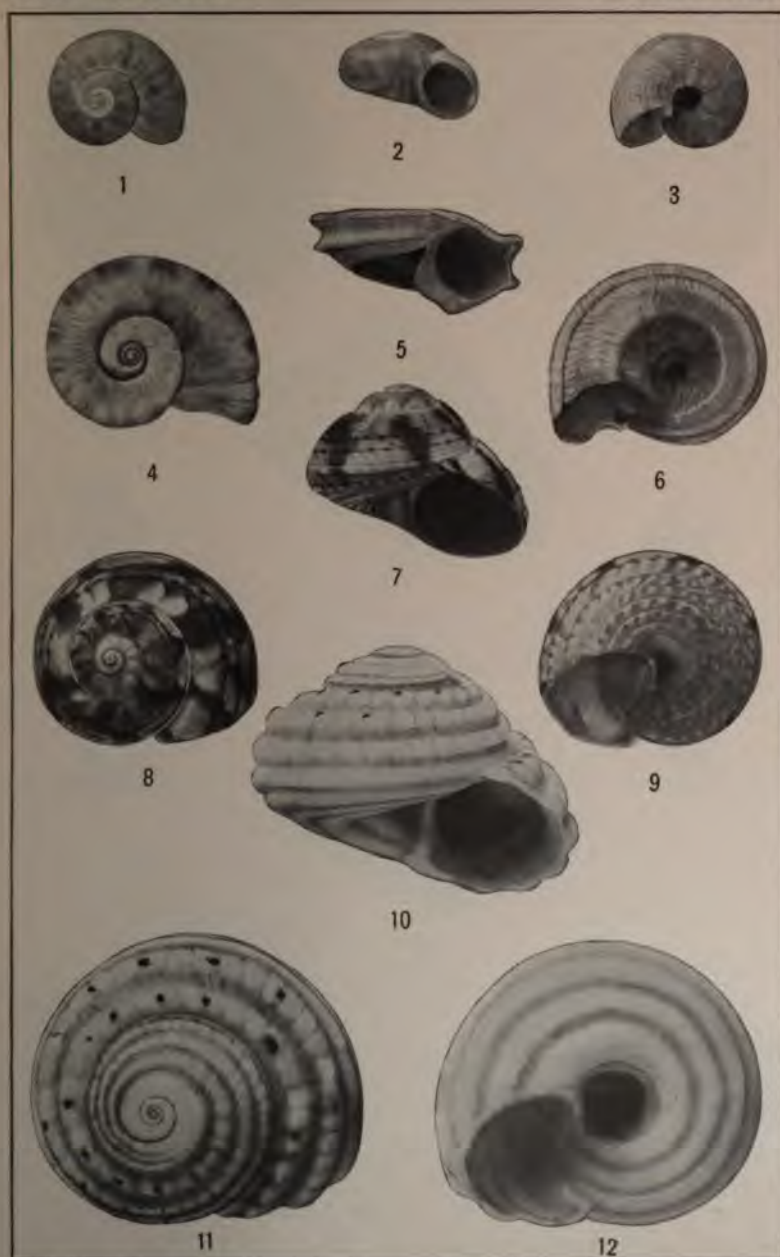




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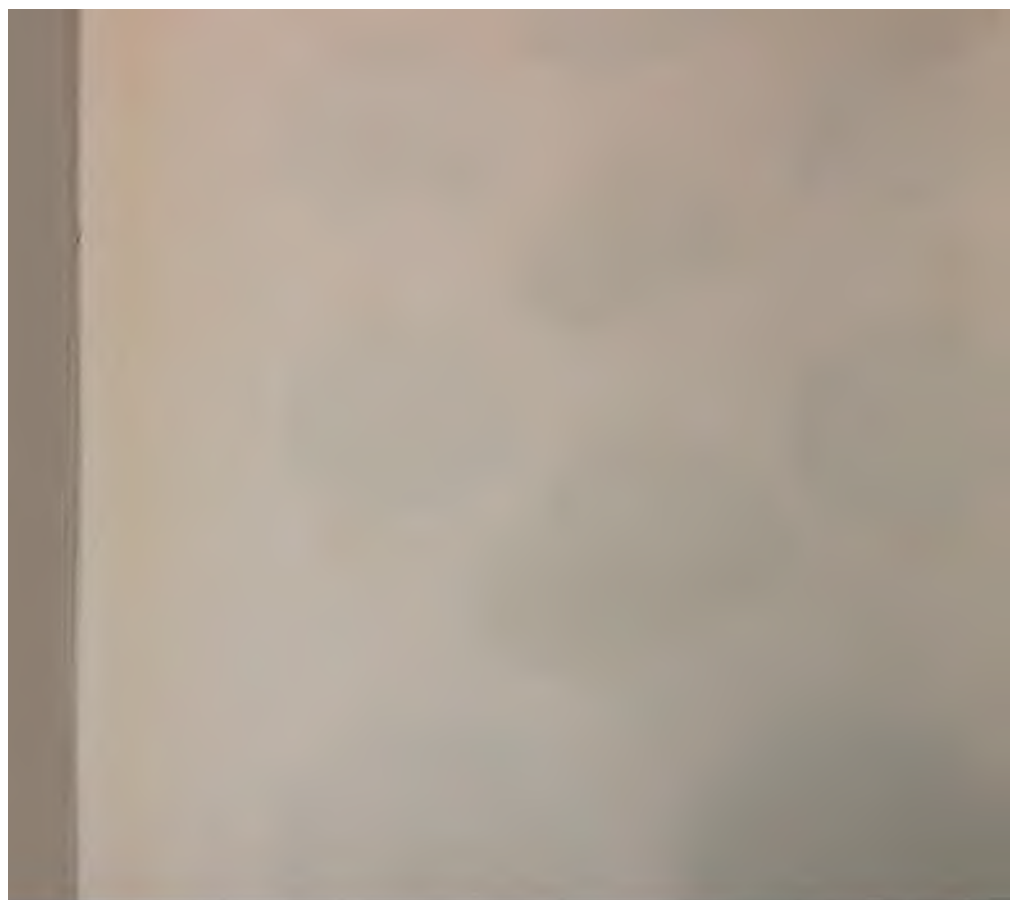
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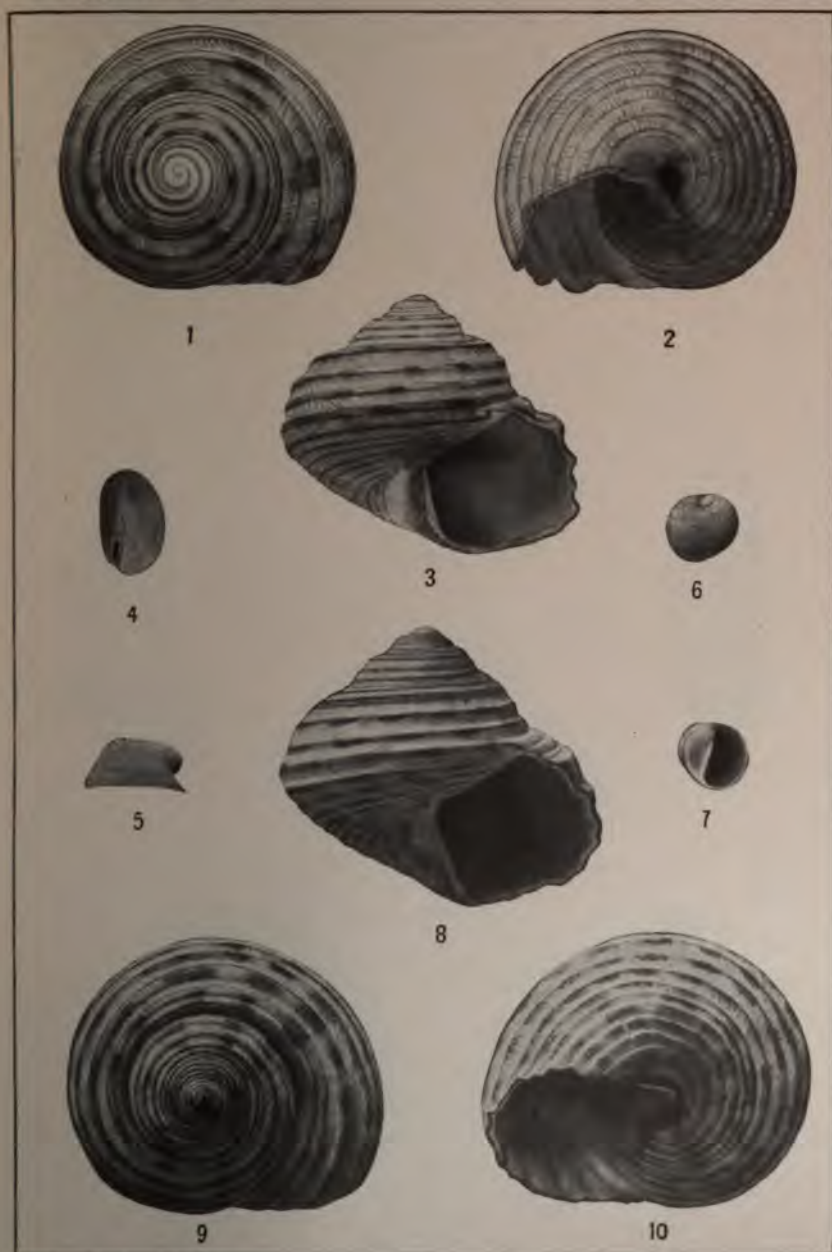




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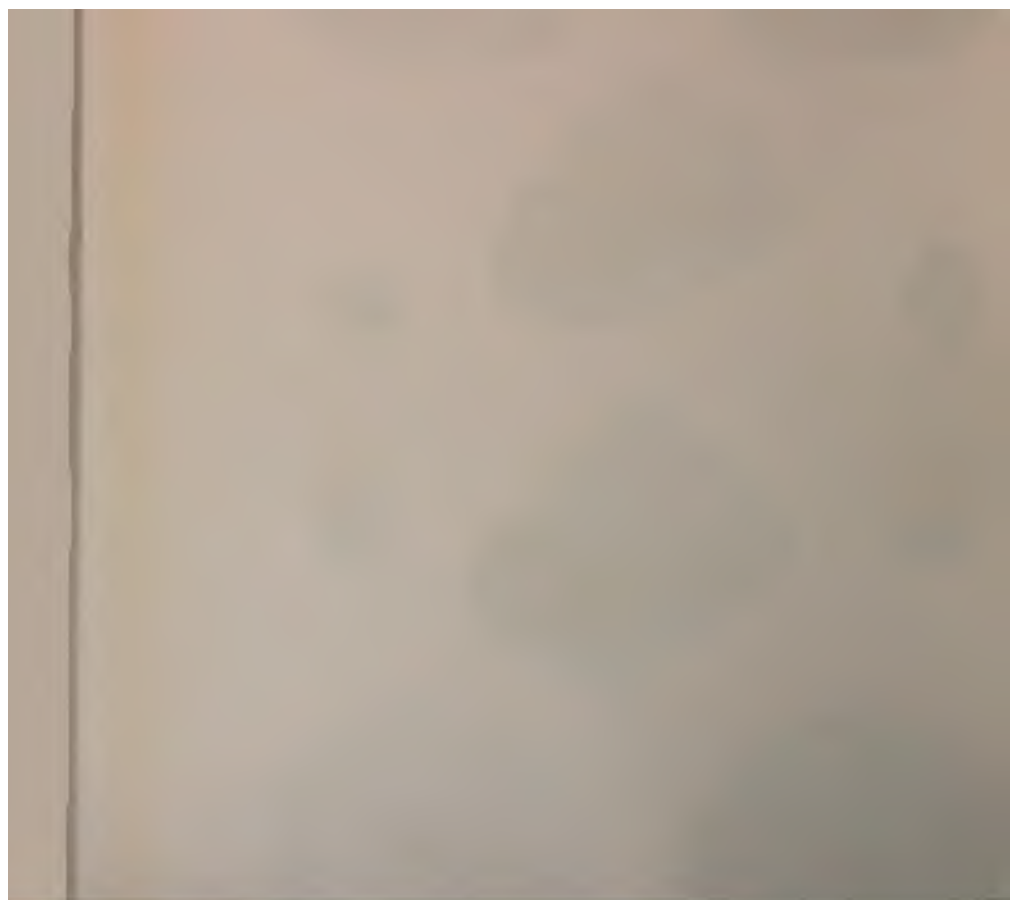
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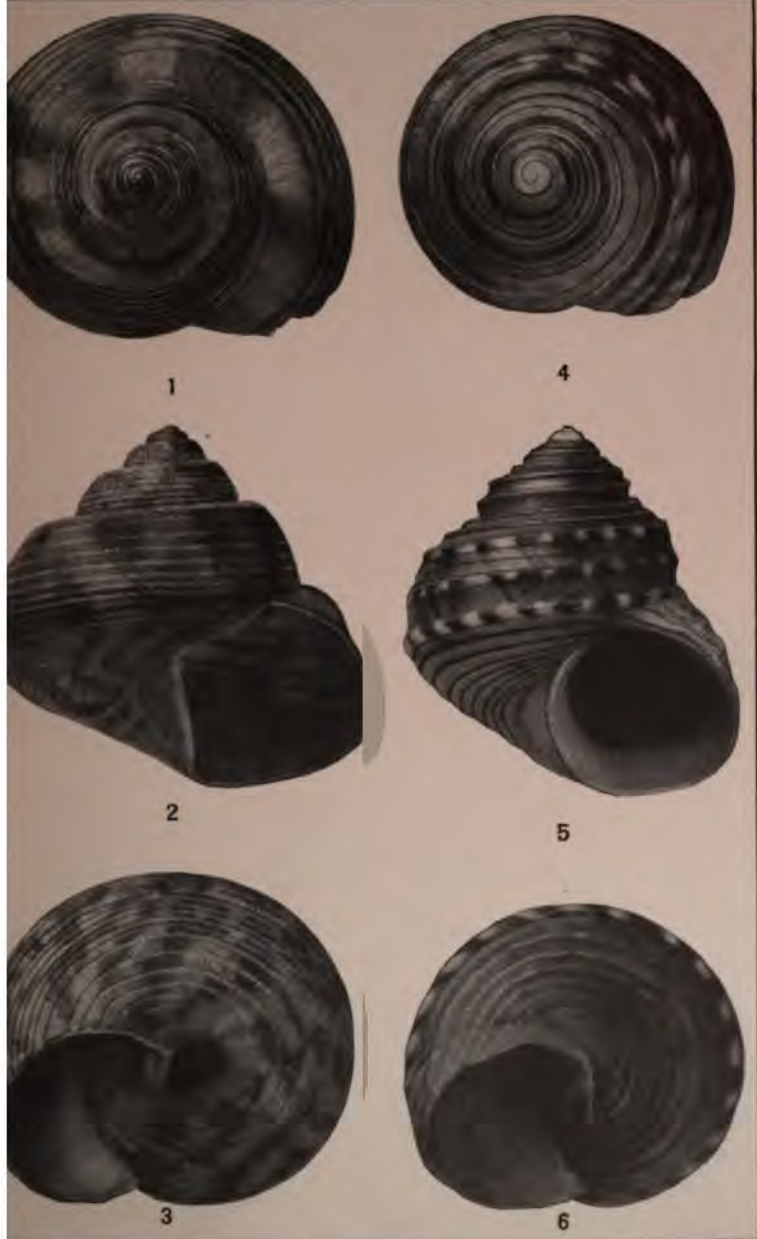




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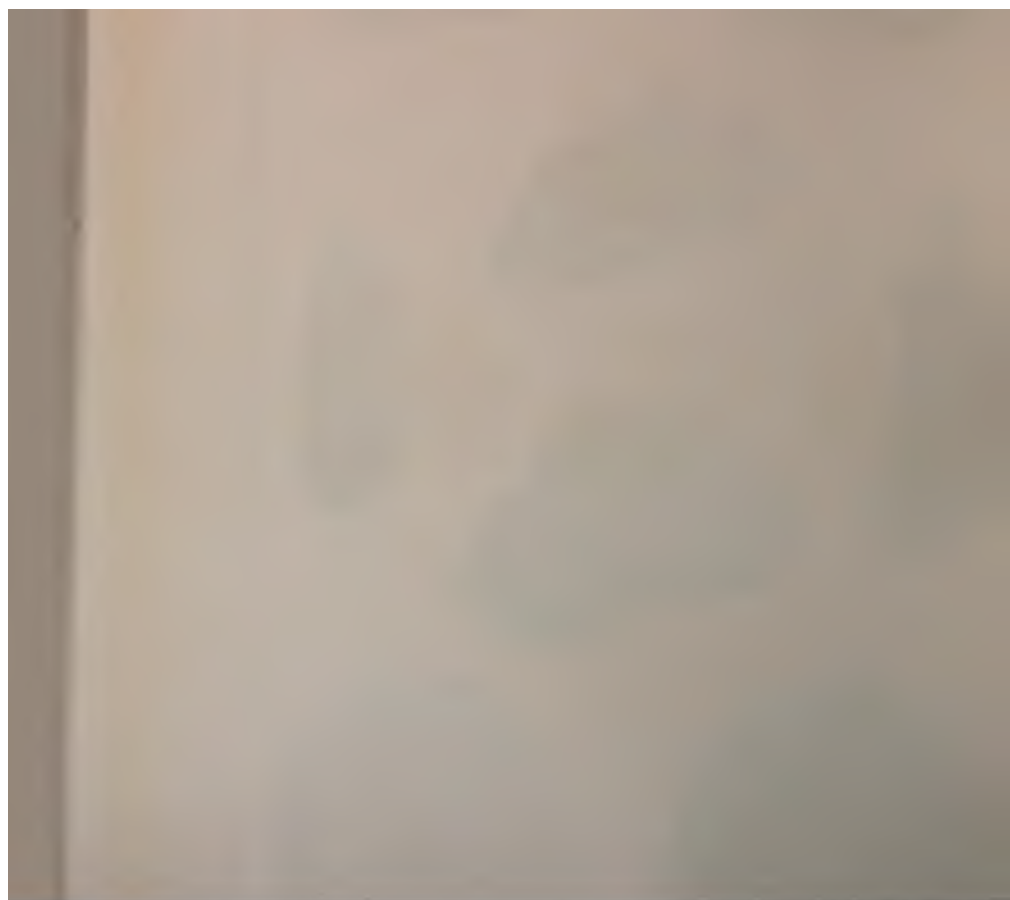
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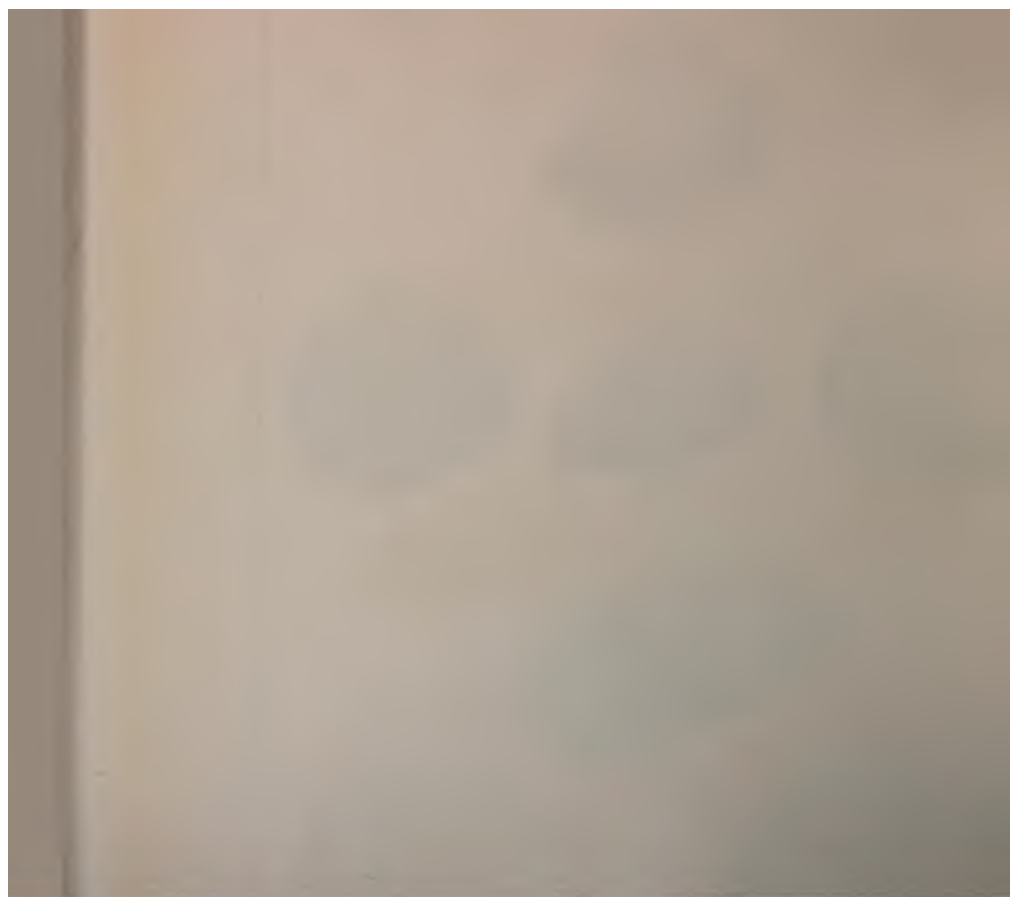
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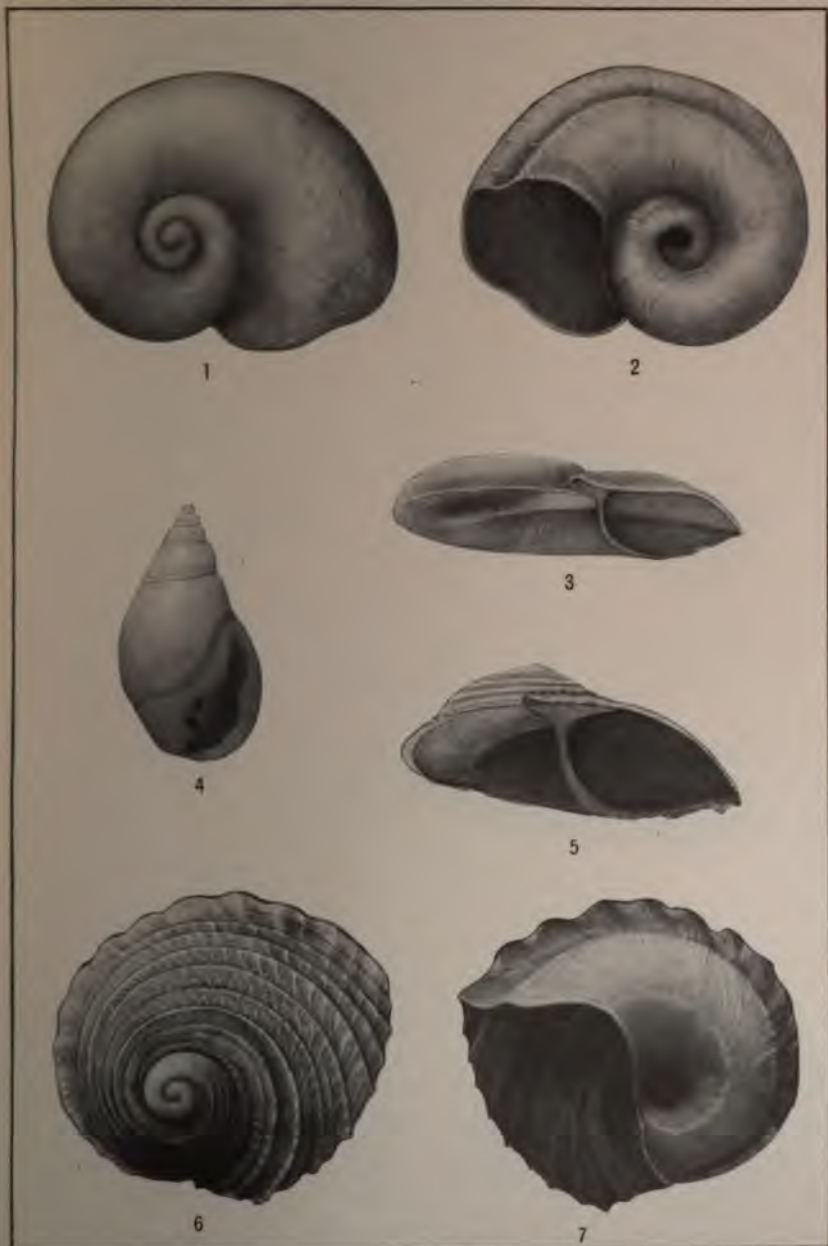




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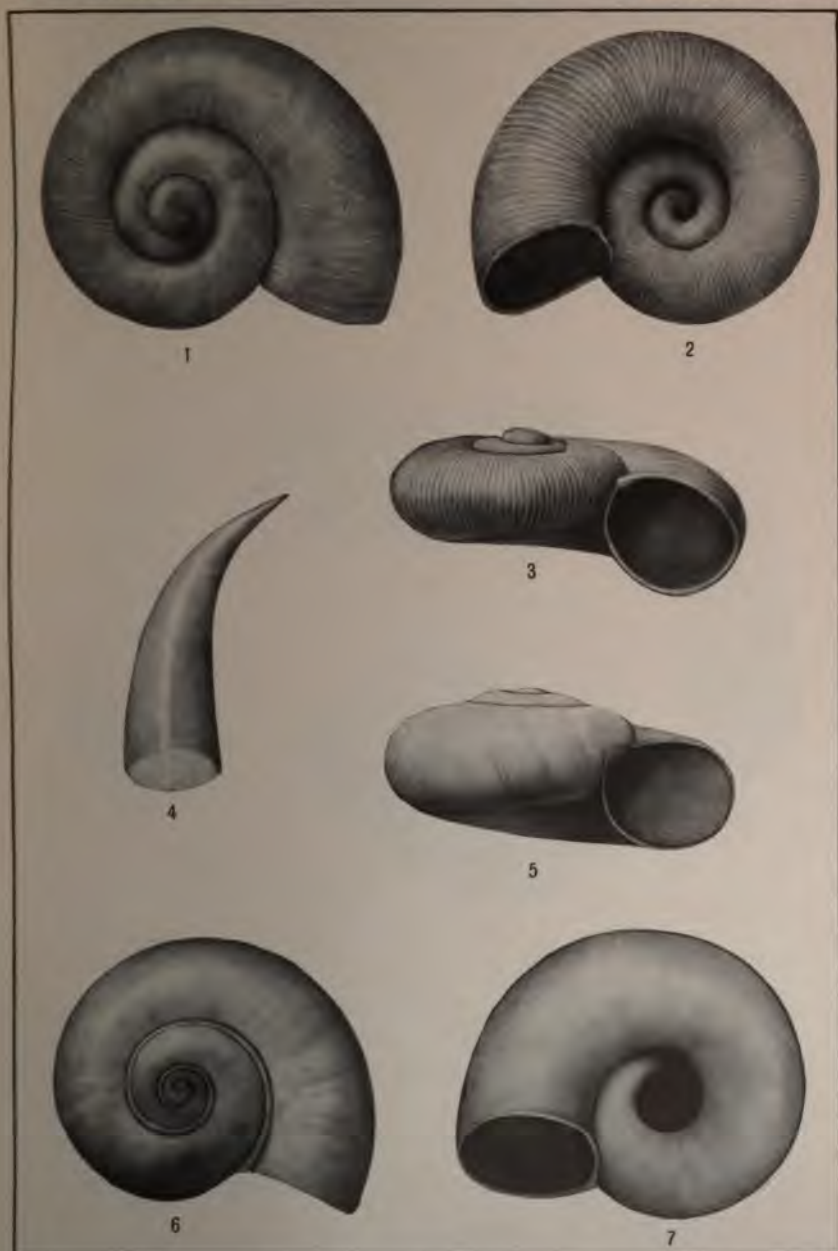




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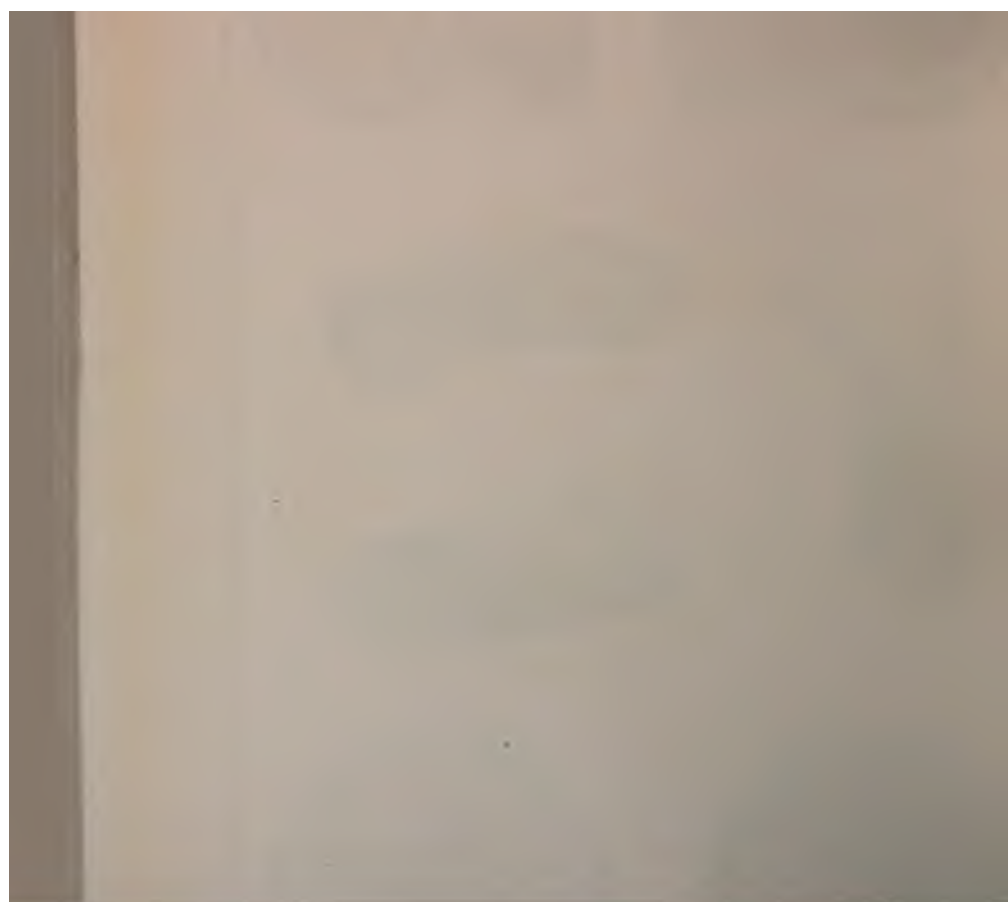
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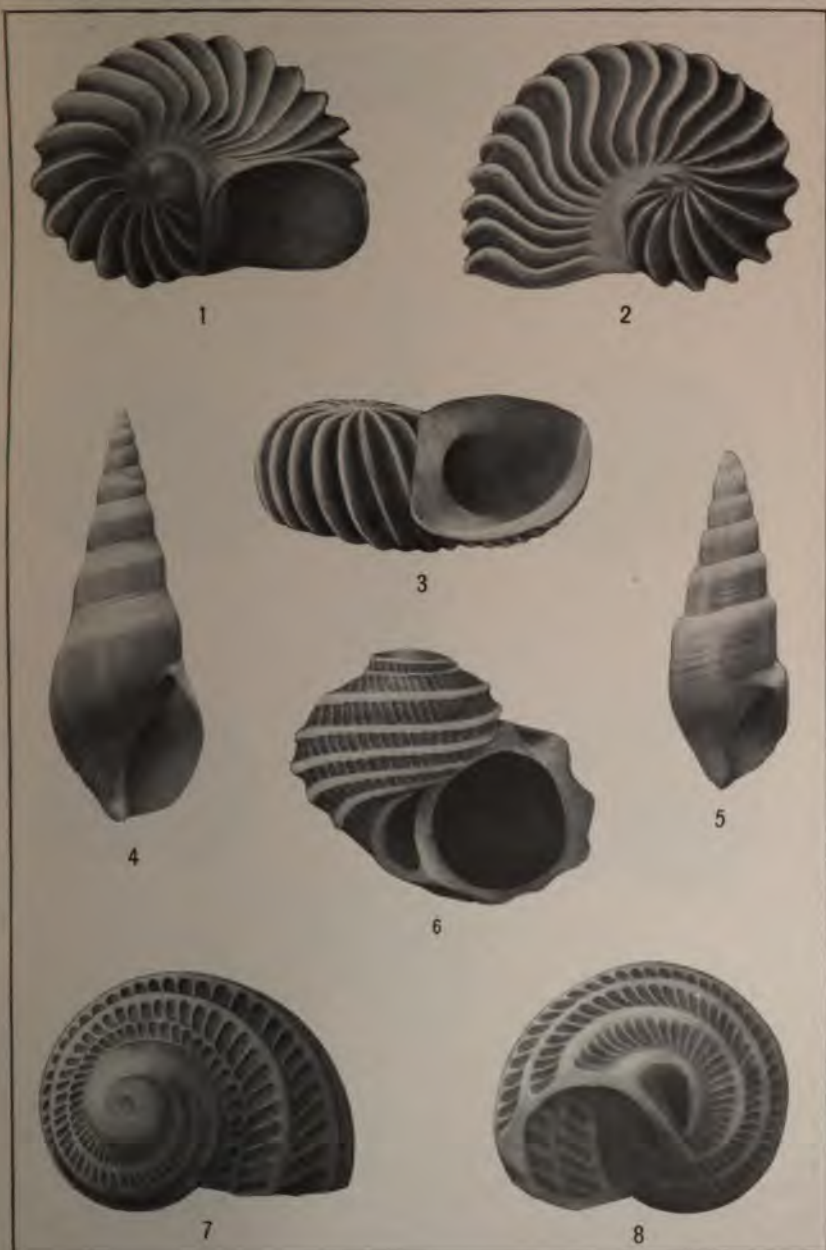




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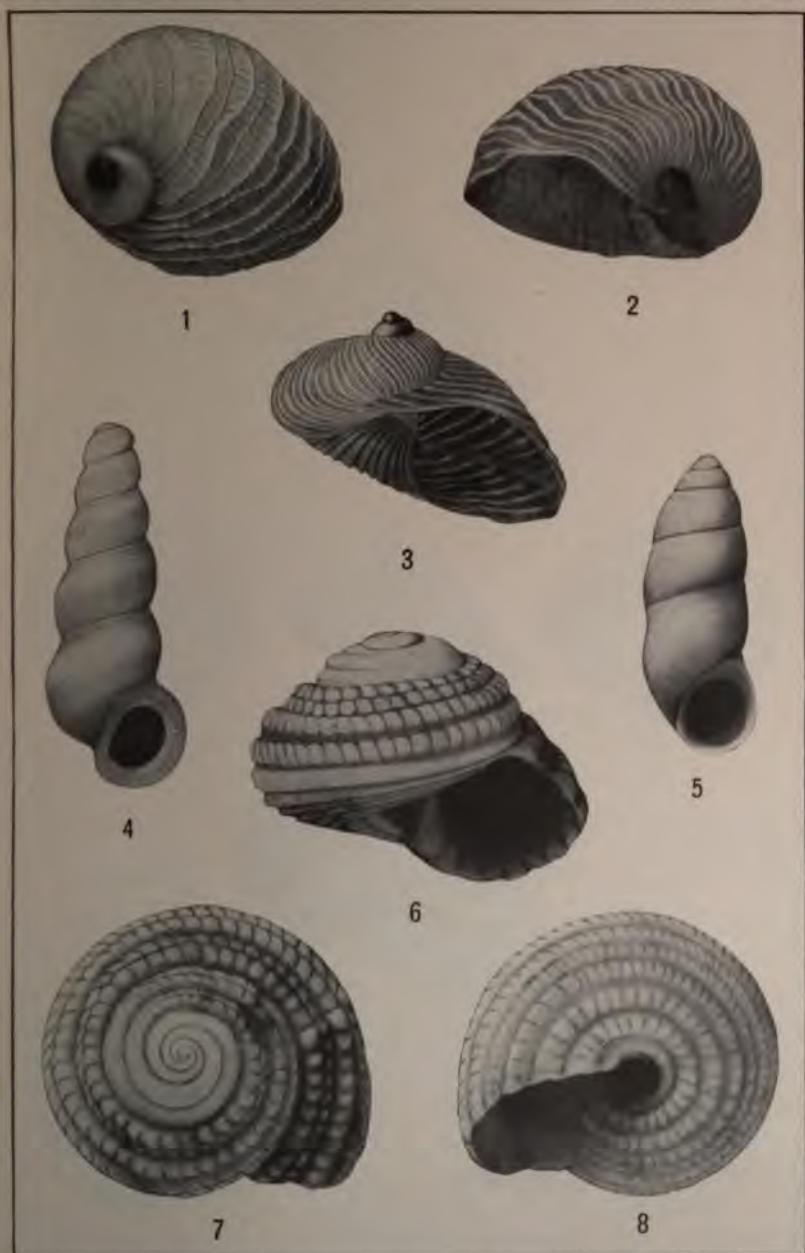




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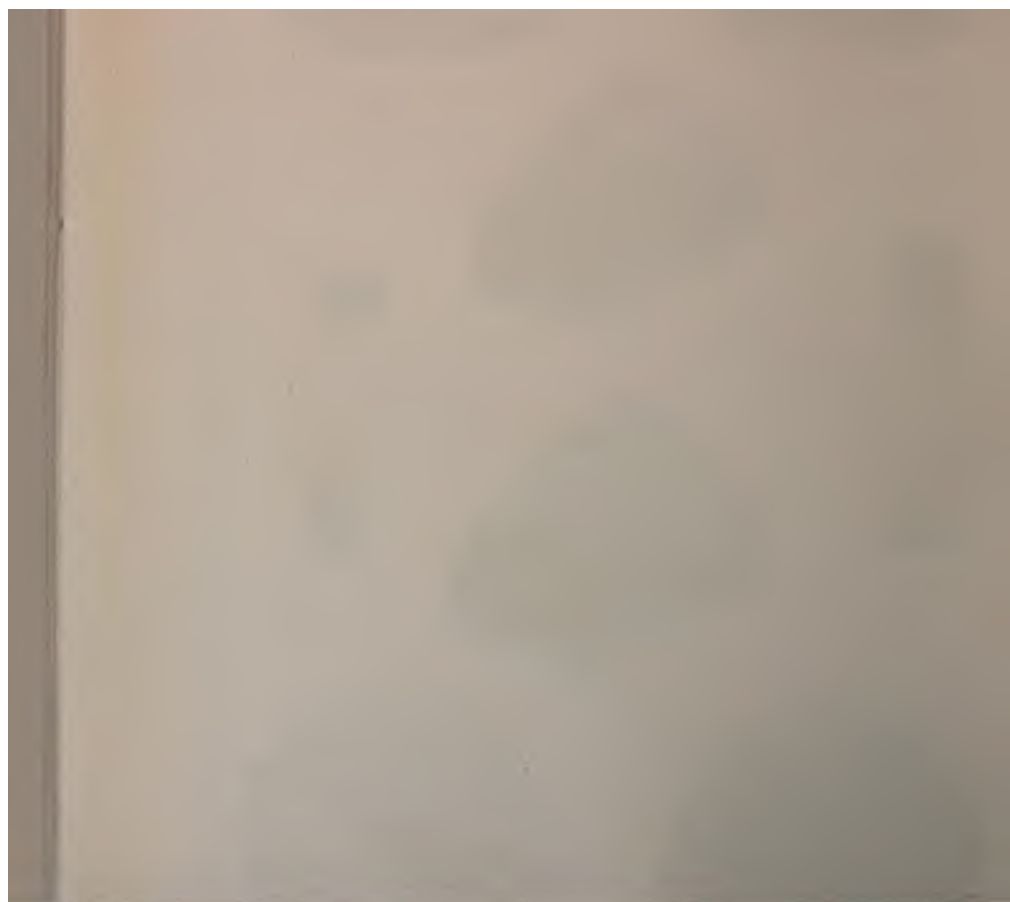
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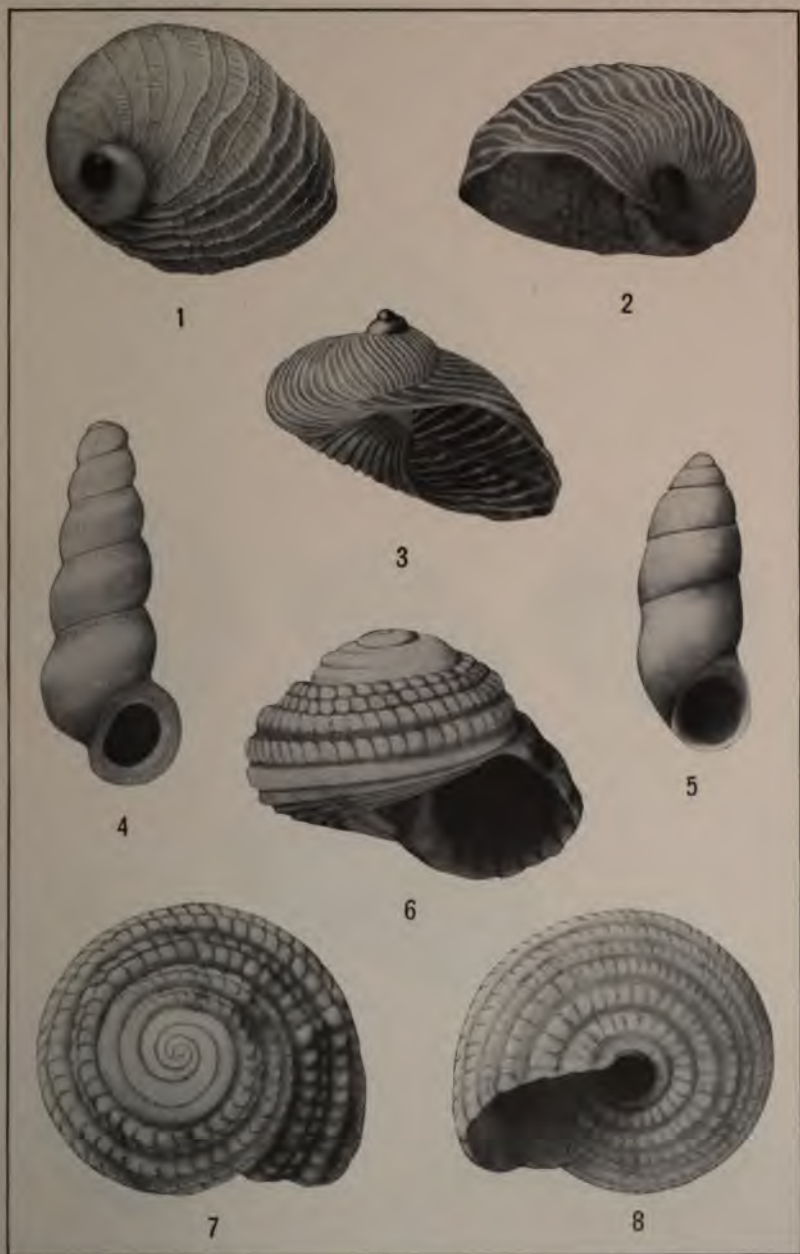




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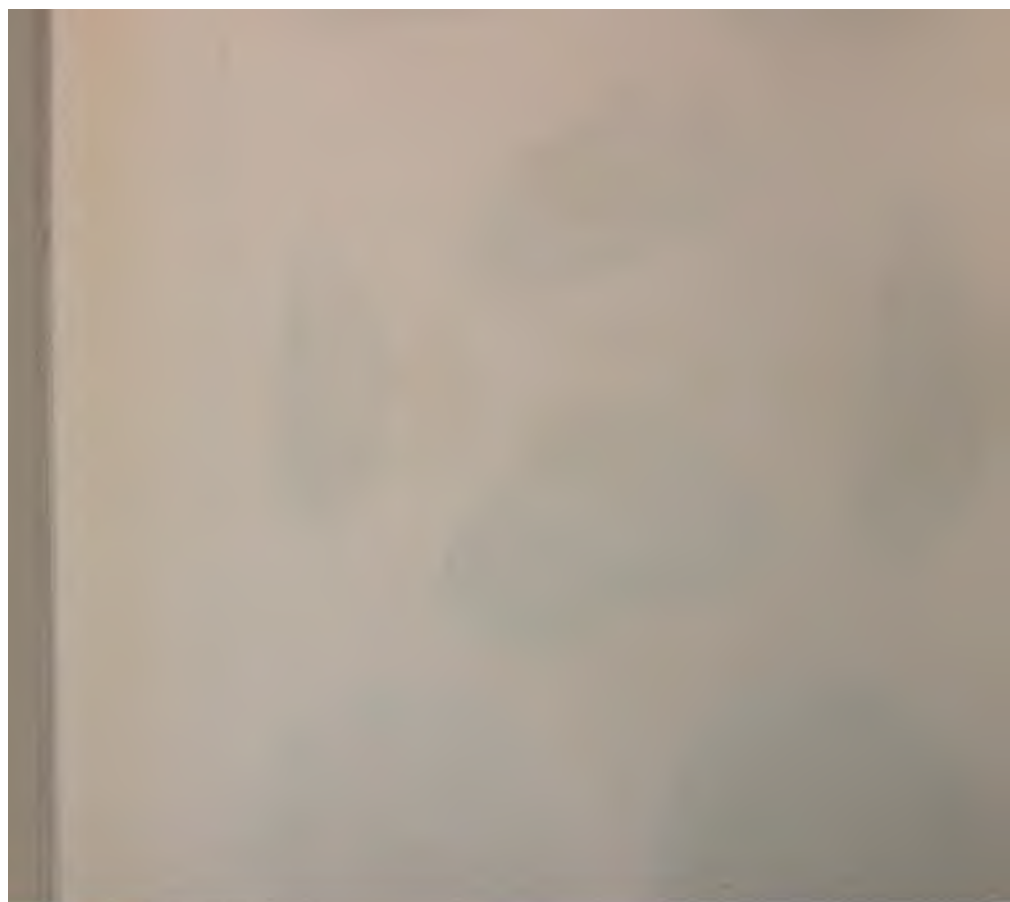
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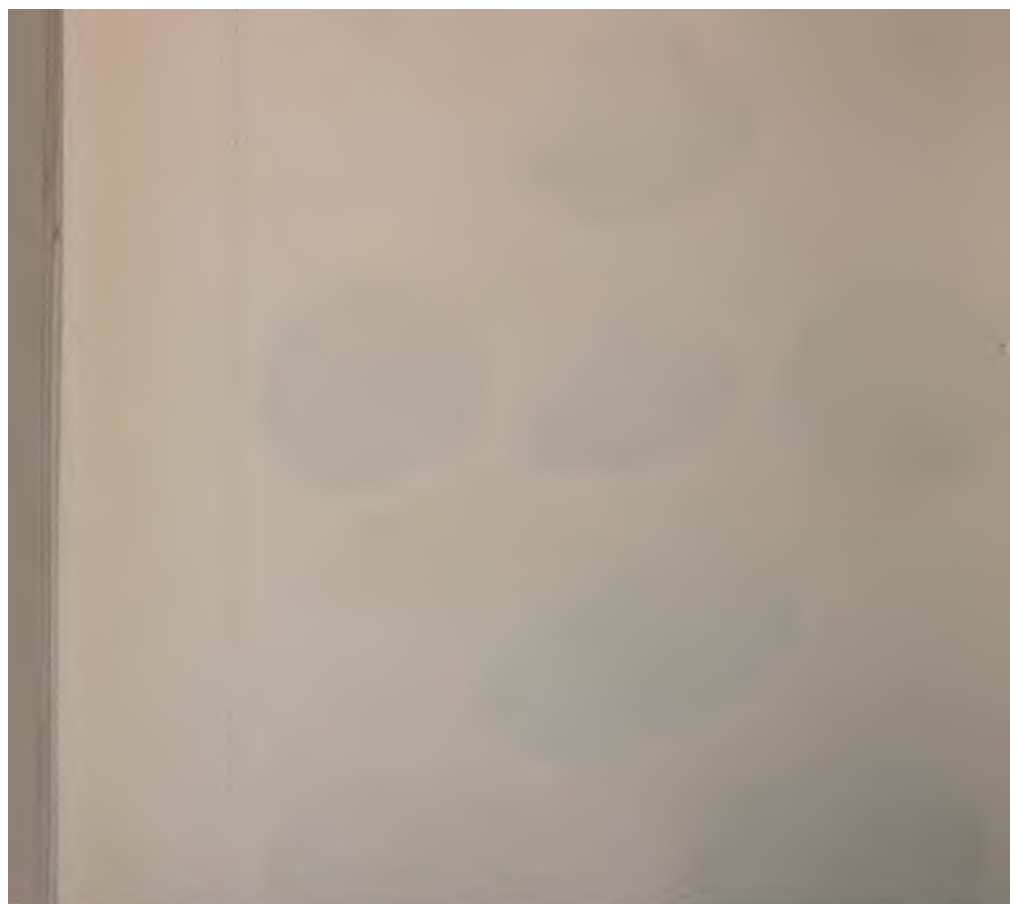
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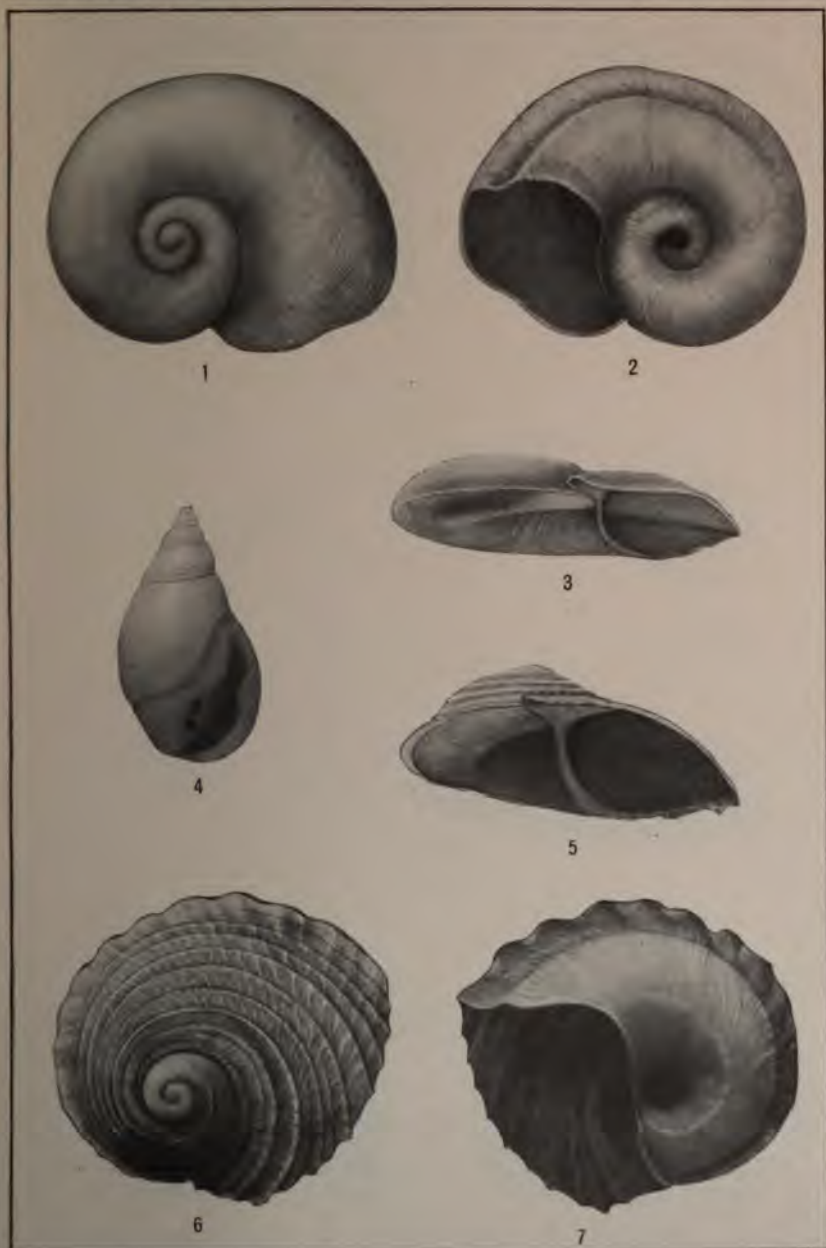




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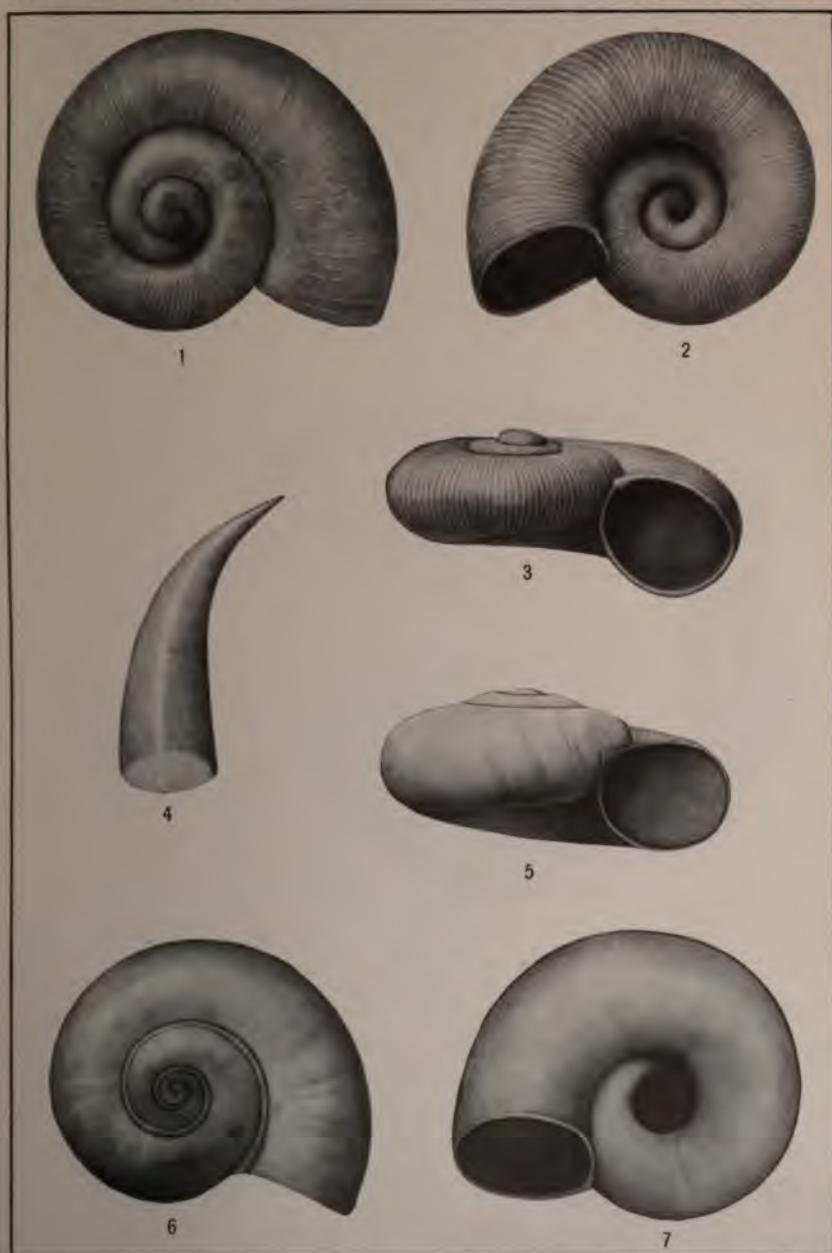




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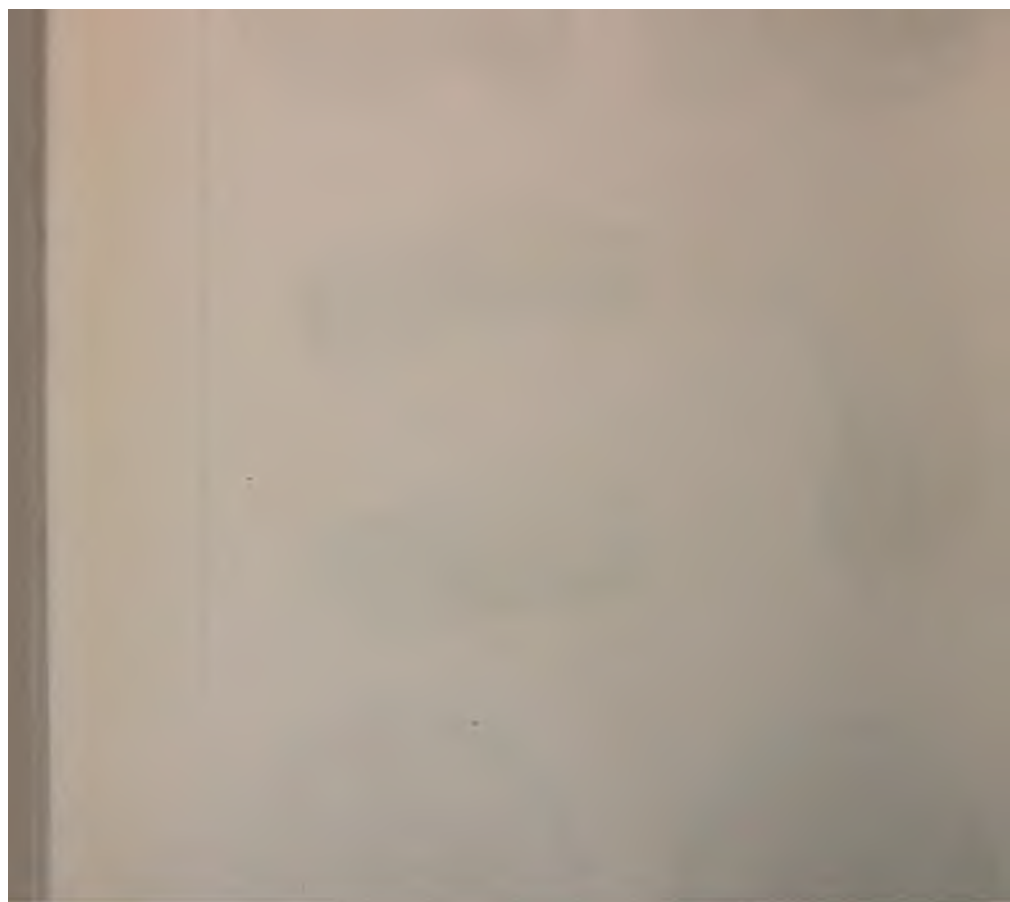
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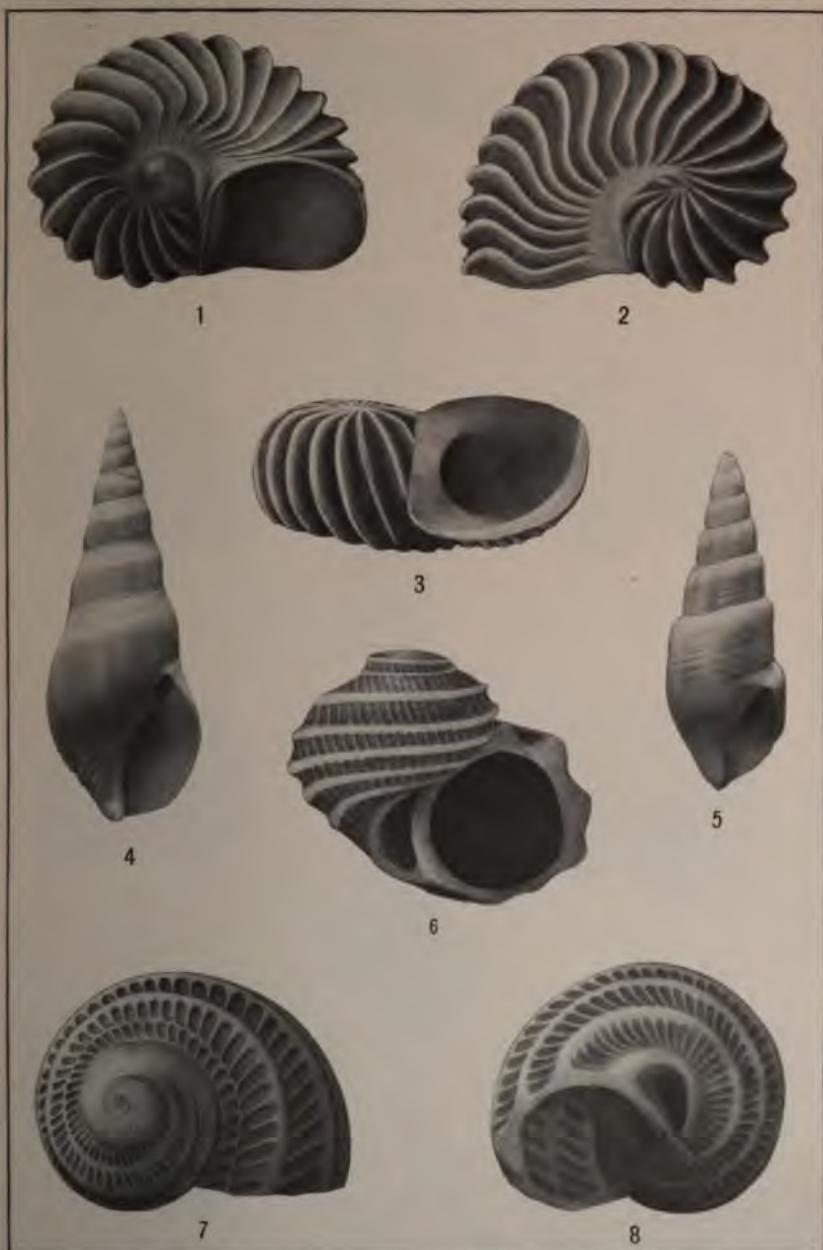




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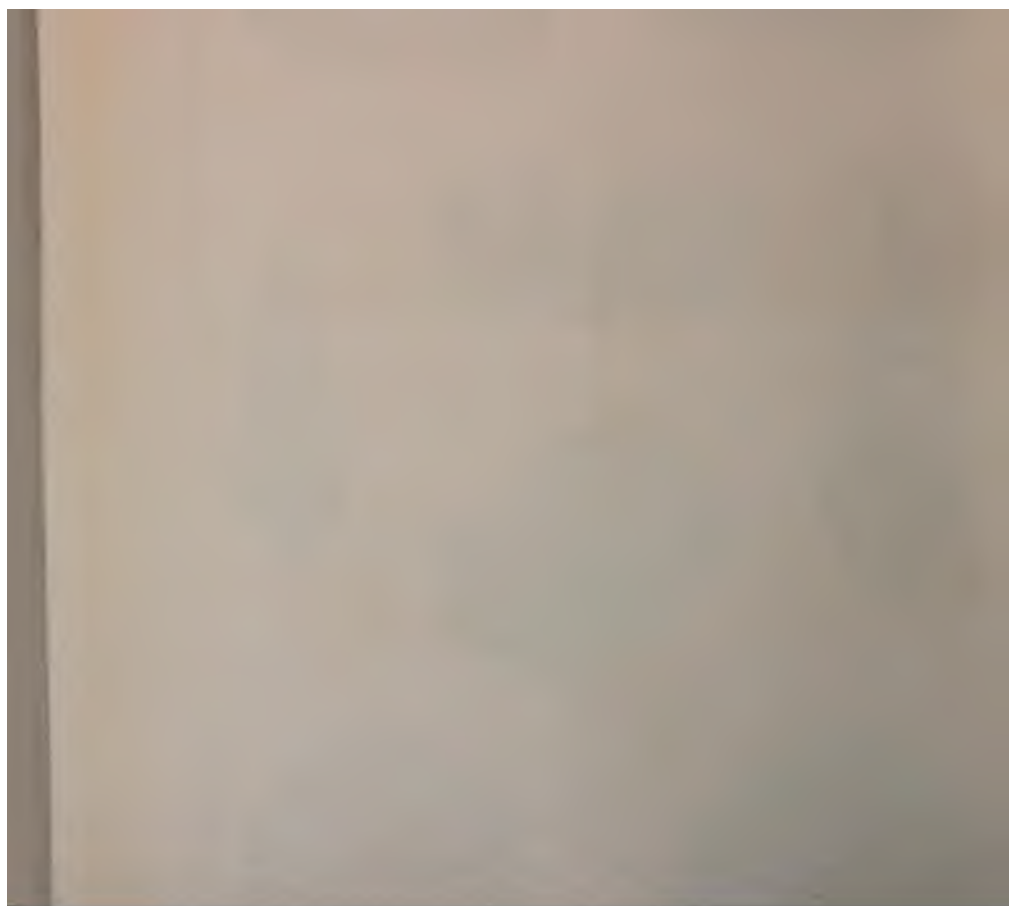
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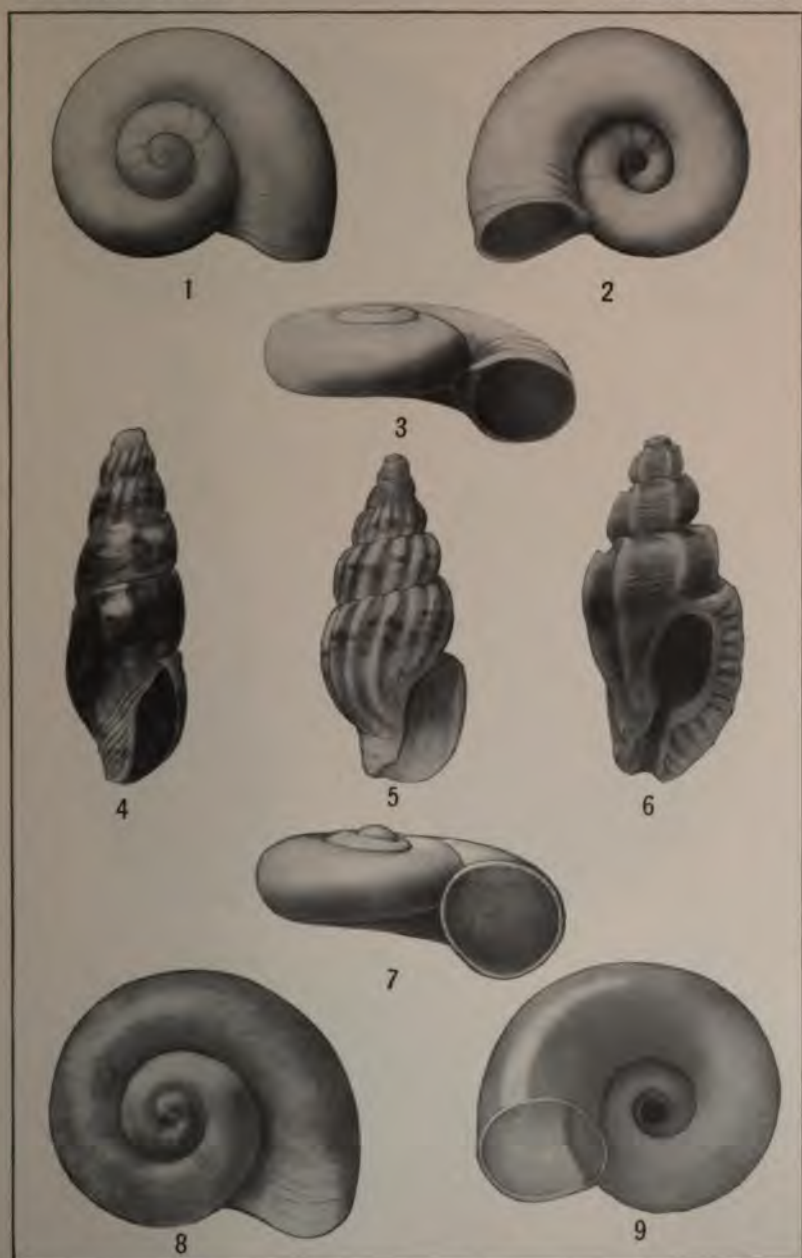




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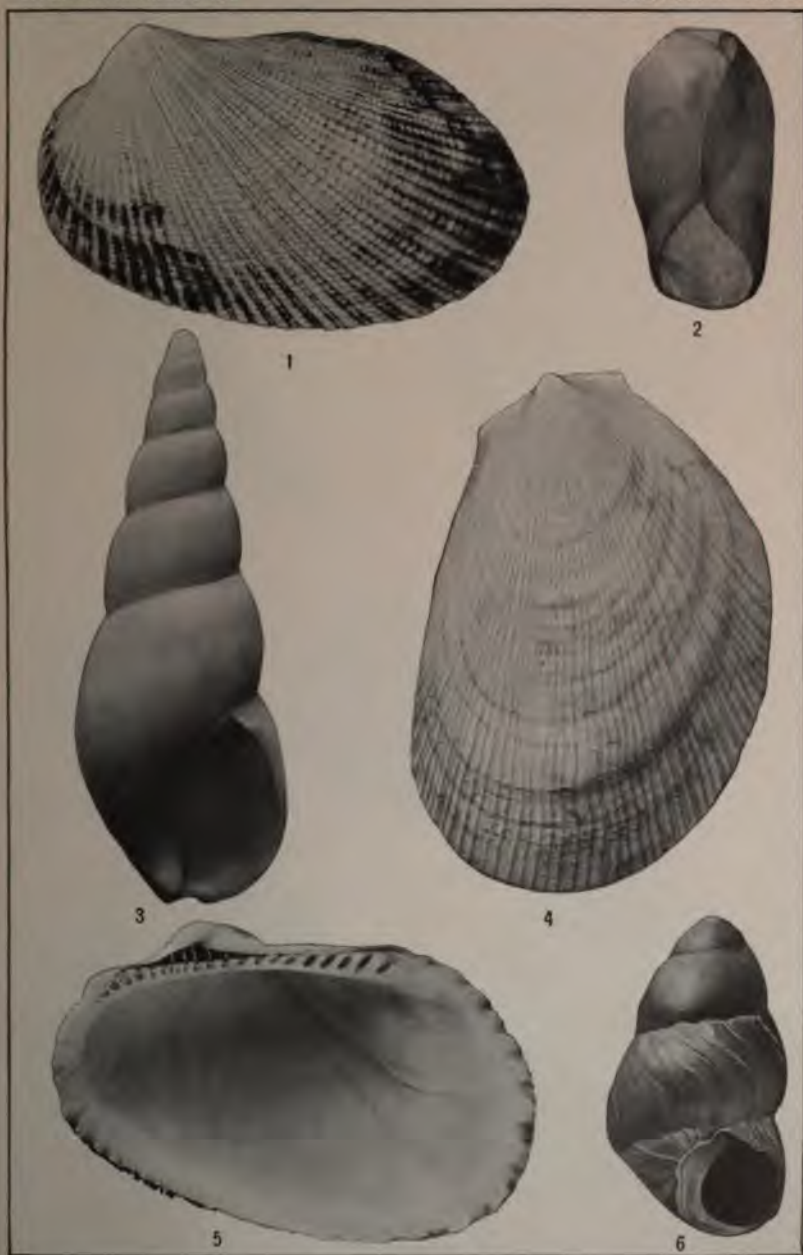




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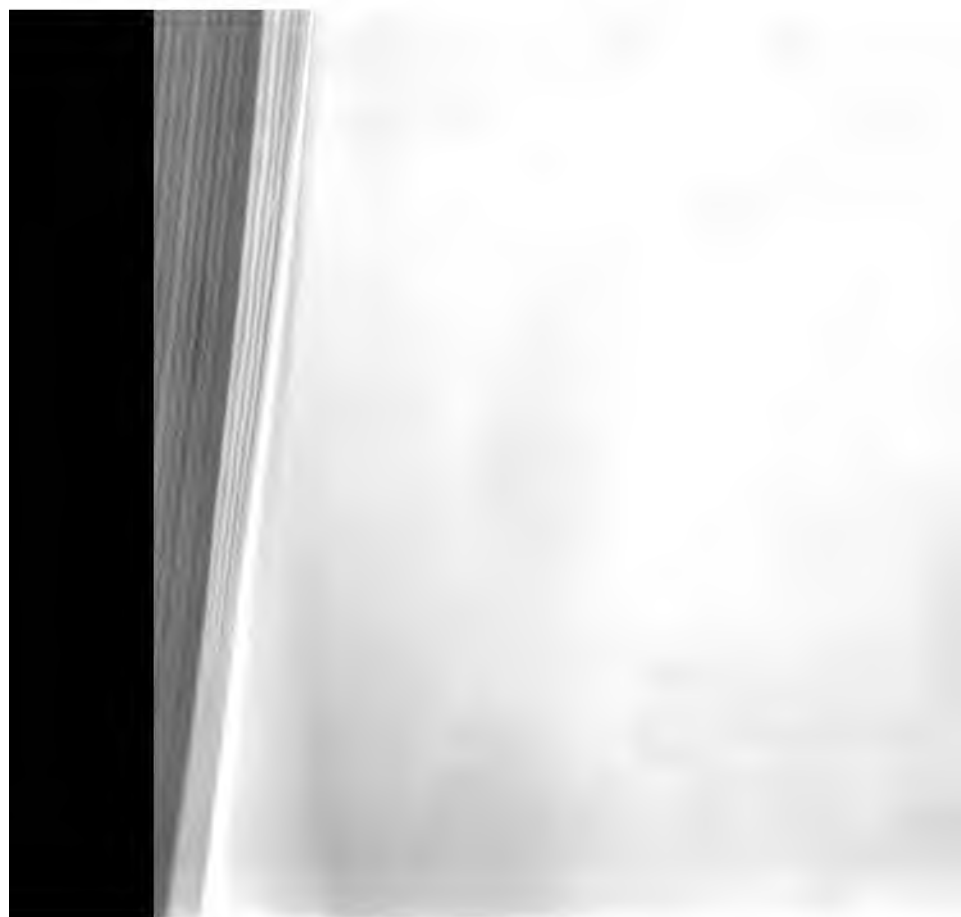
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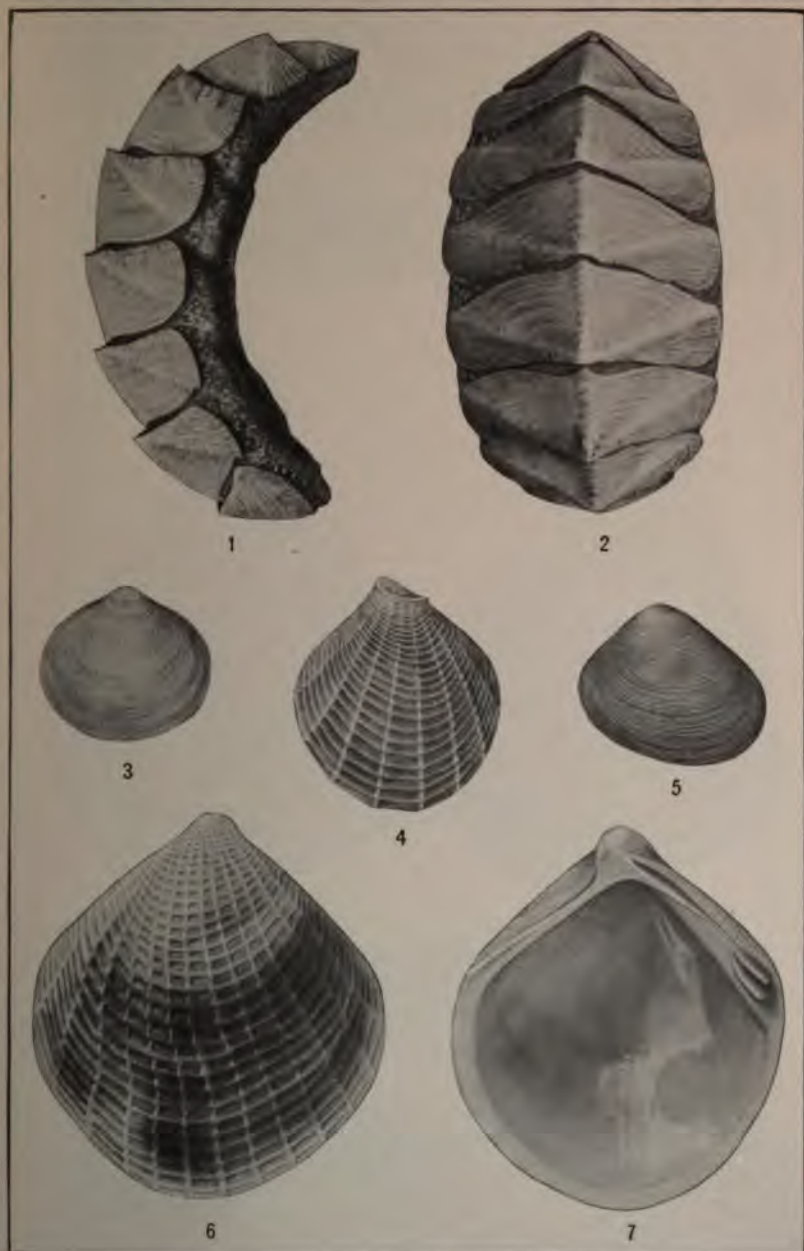




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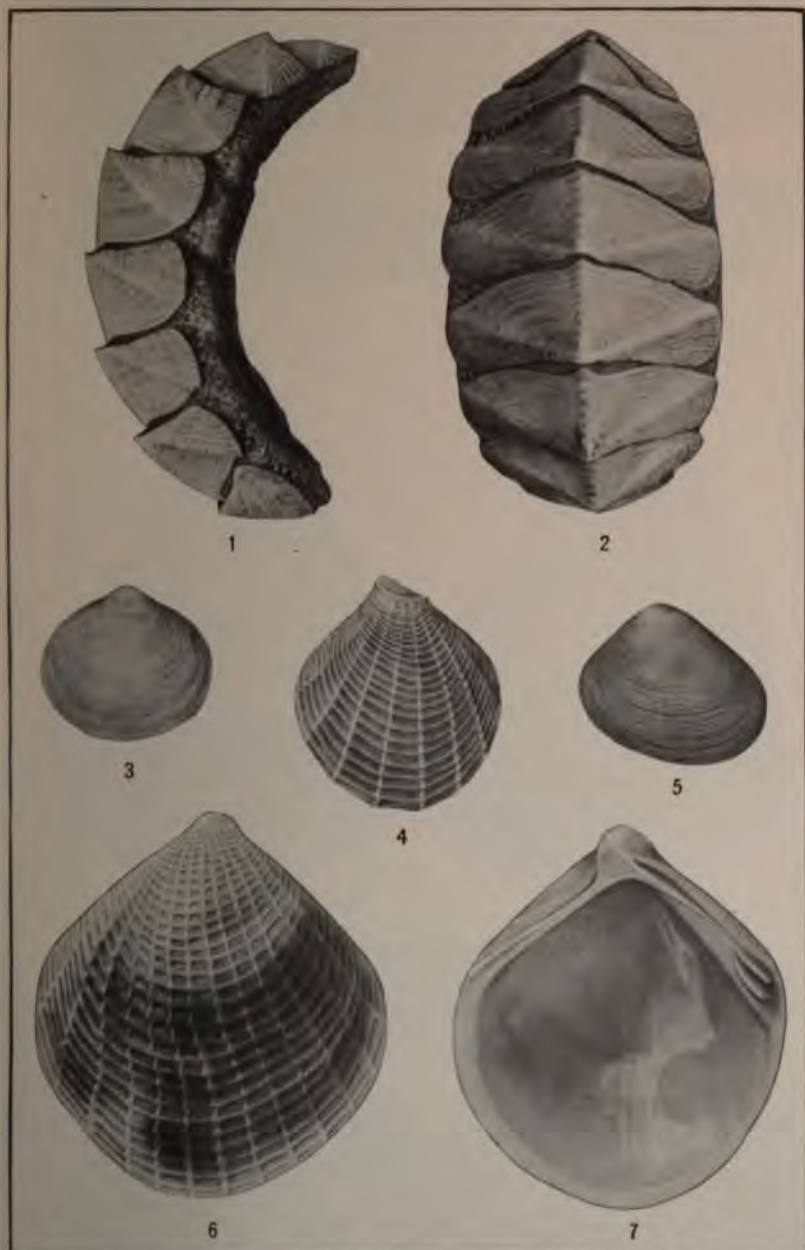




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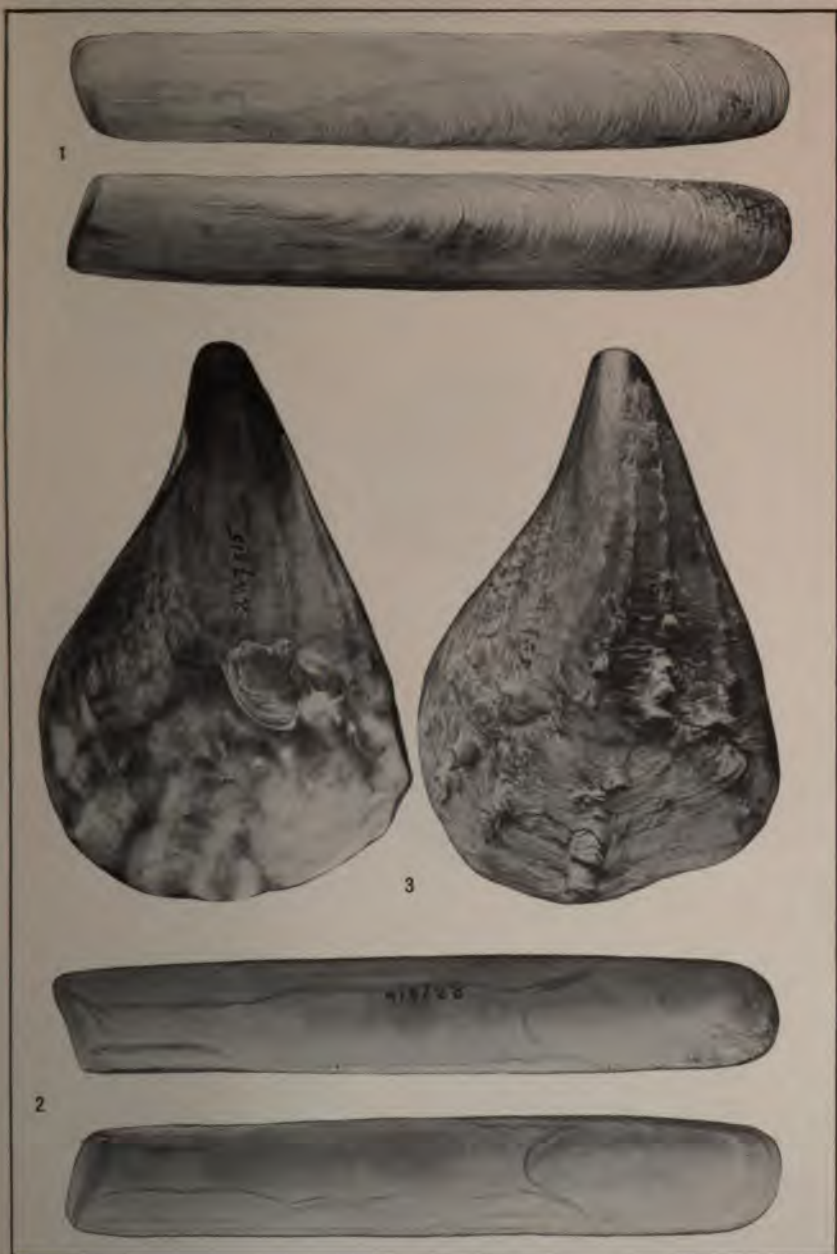




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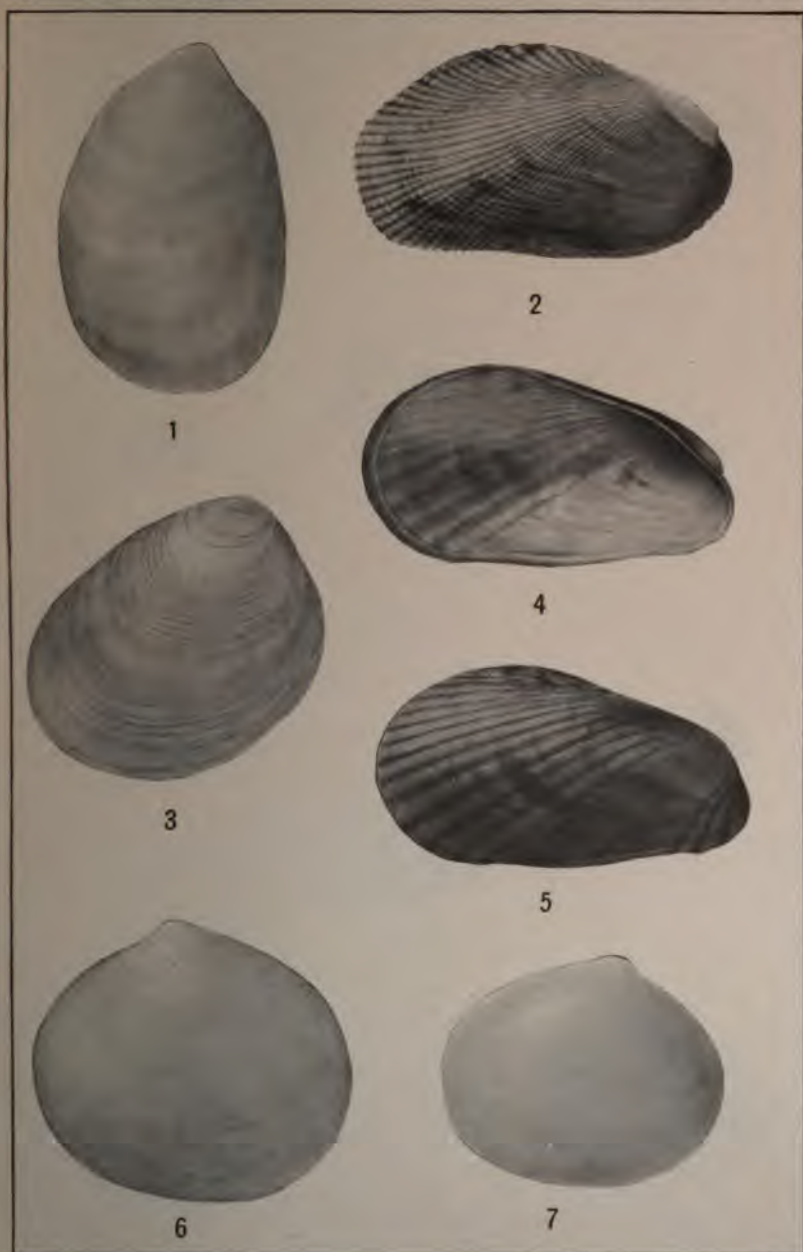




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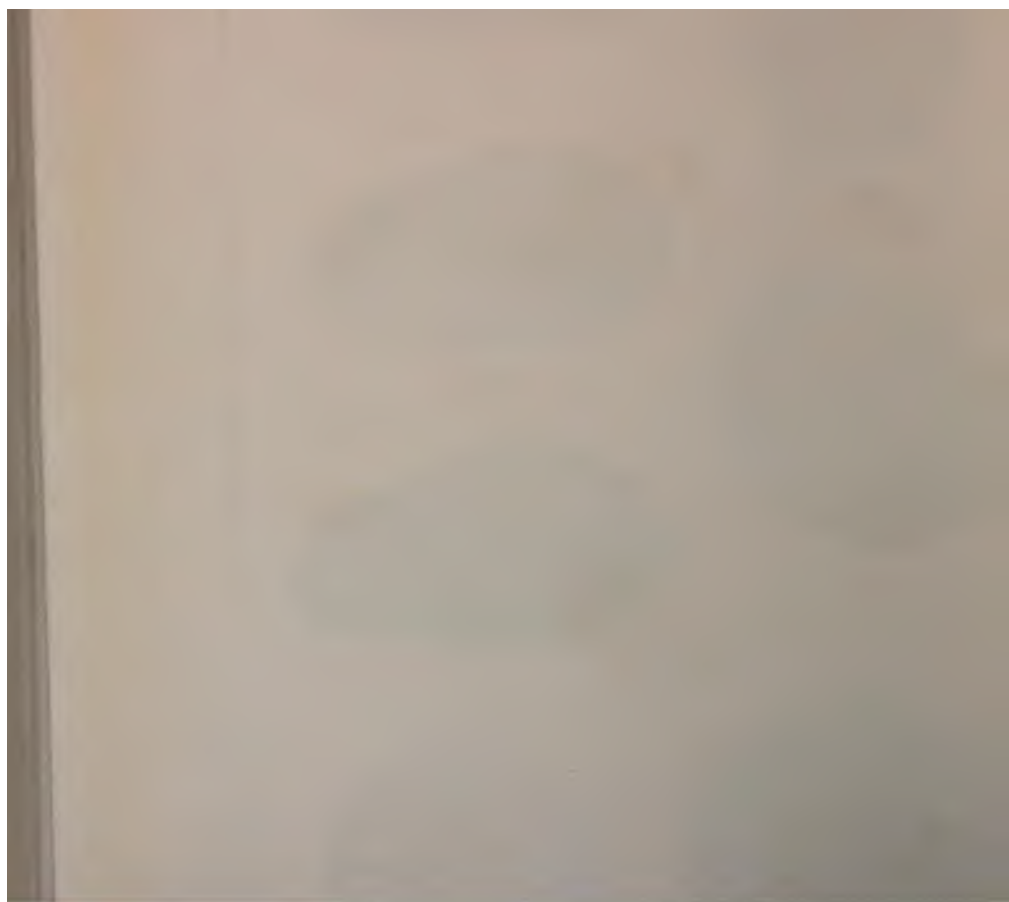
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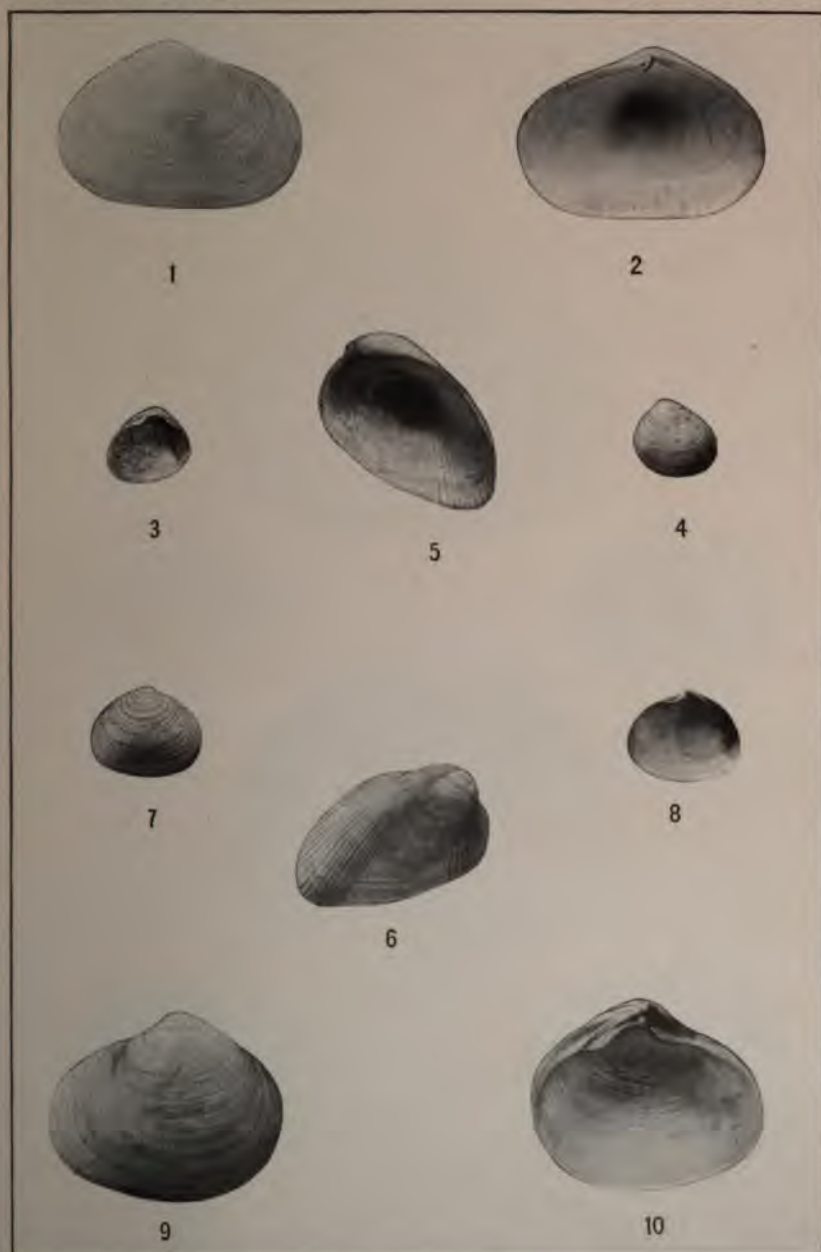




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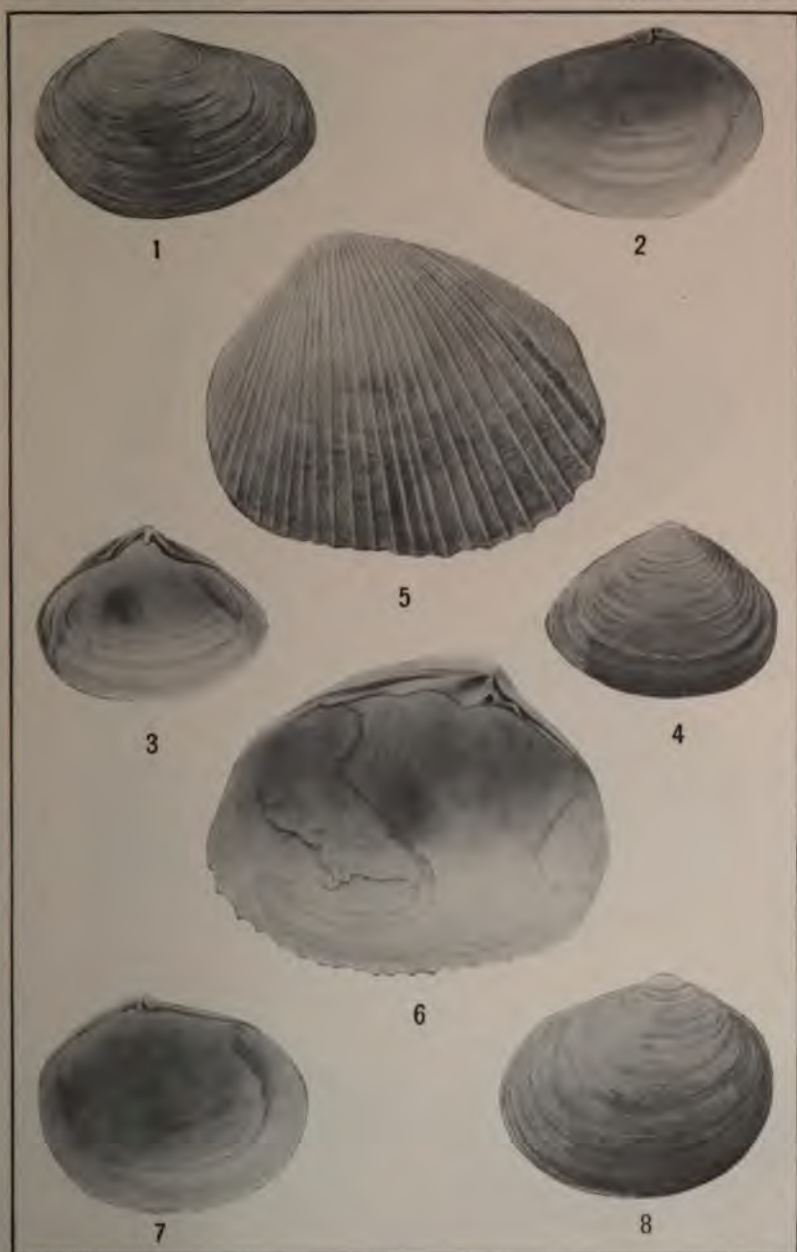




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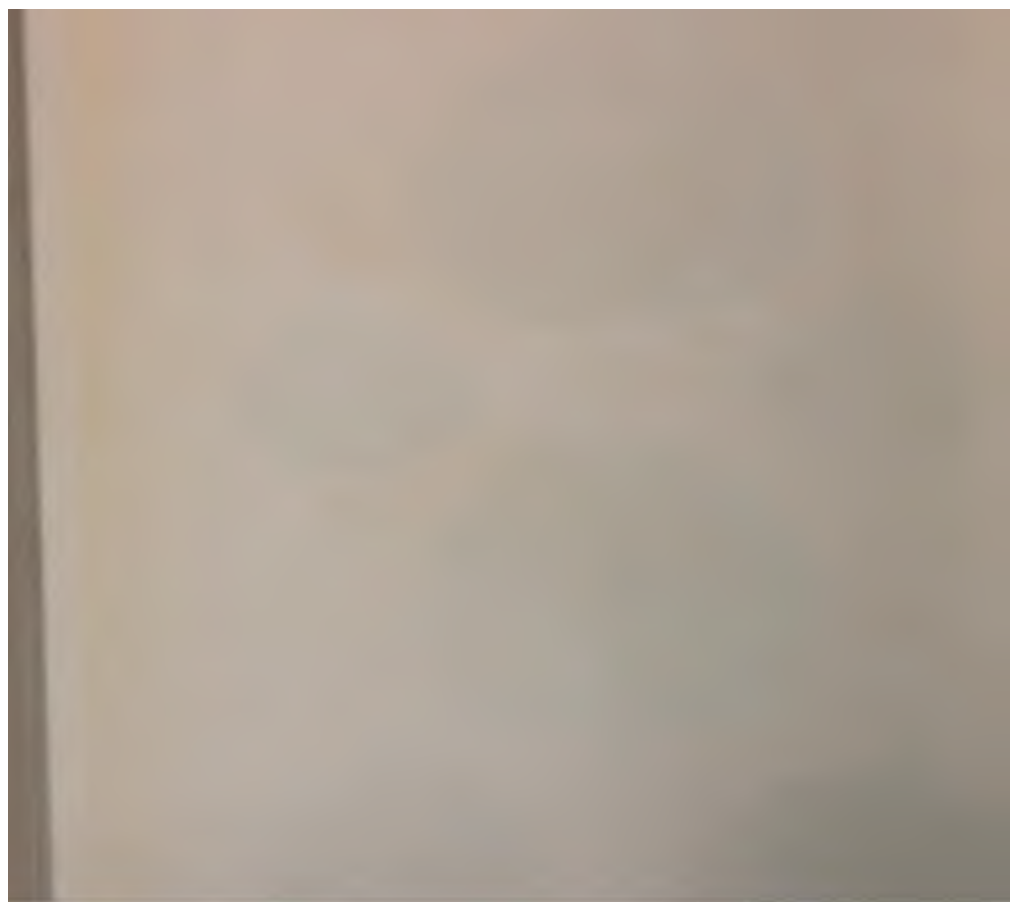
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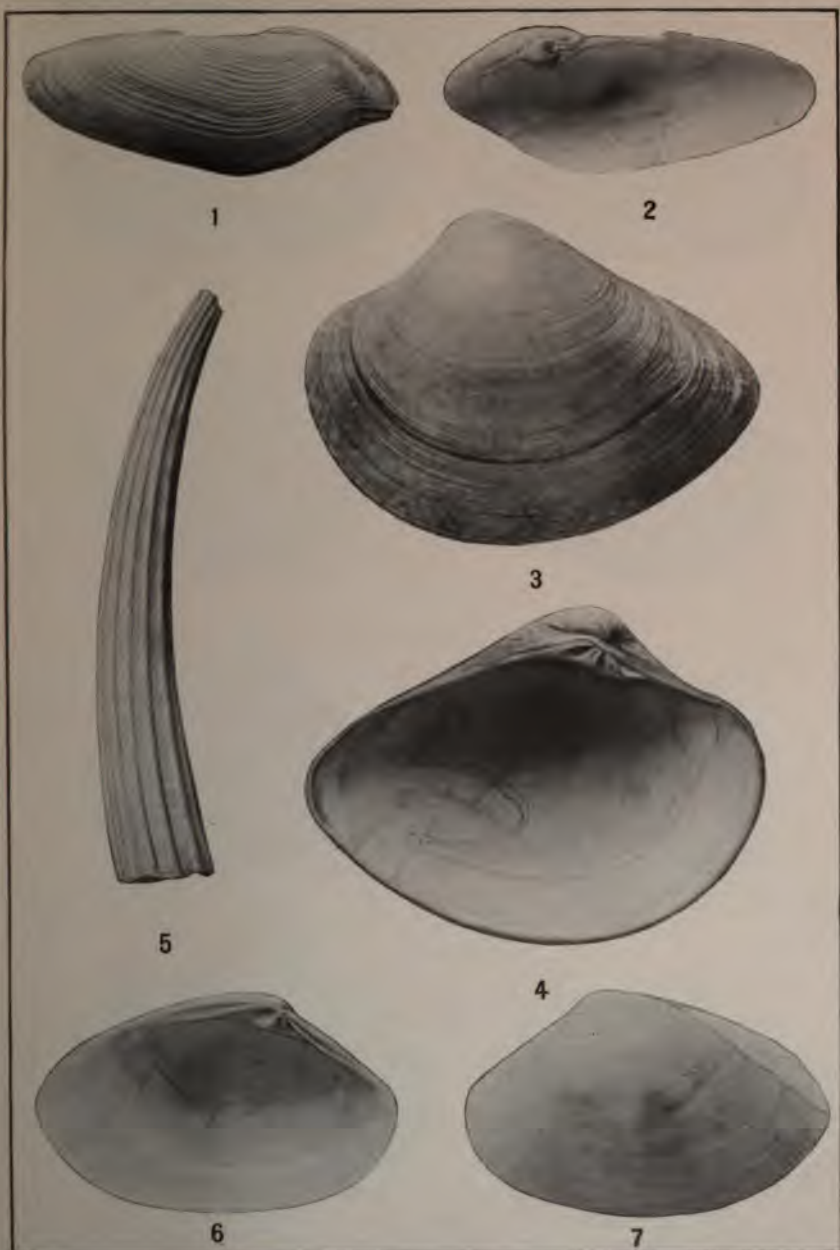




SOUTH AFRICAN MARINE MOLLUSKS.

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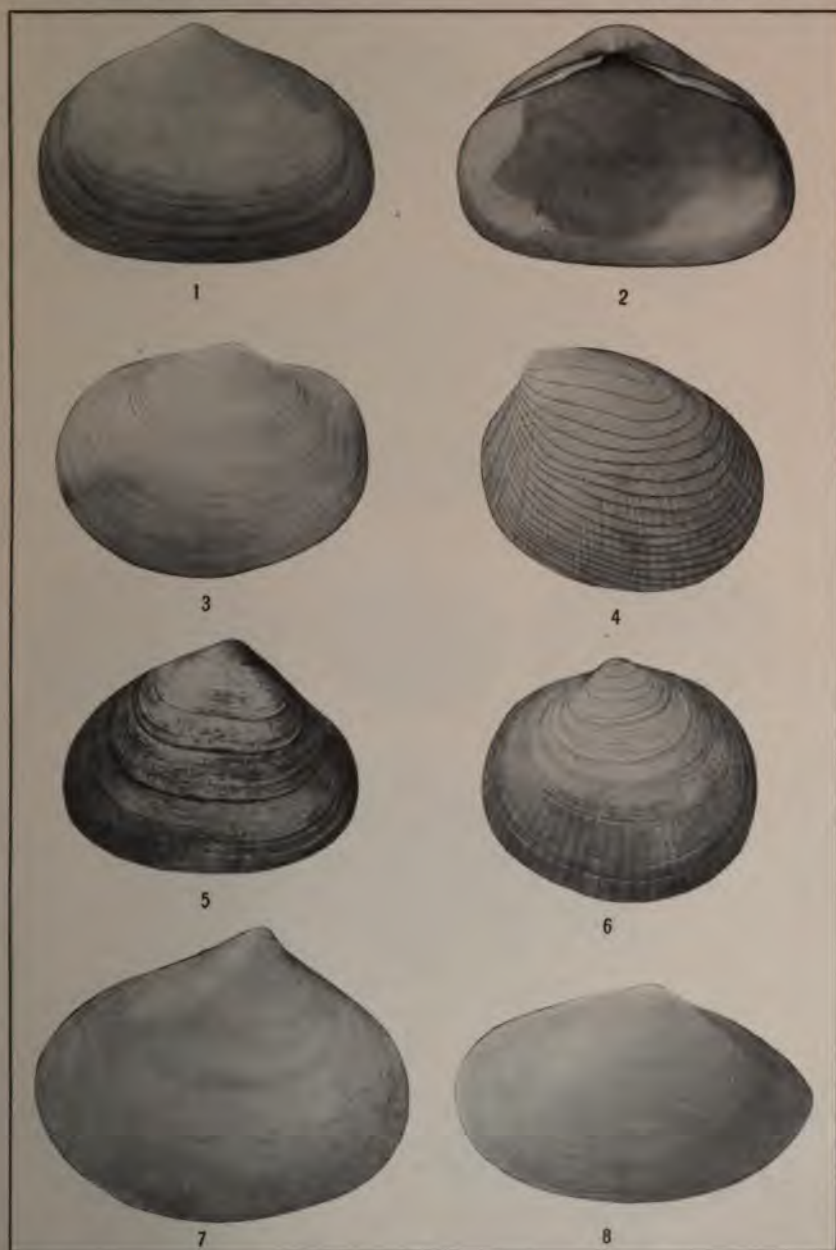




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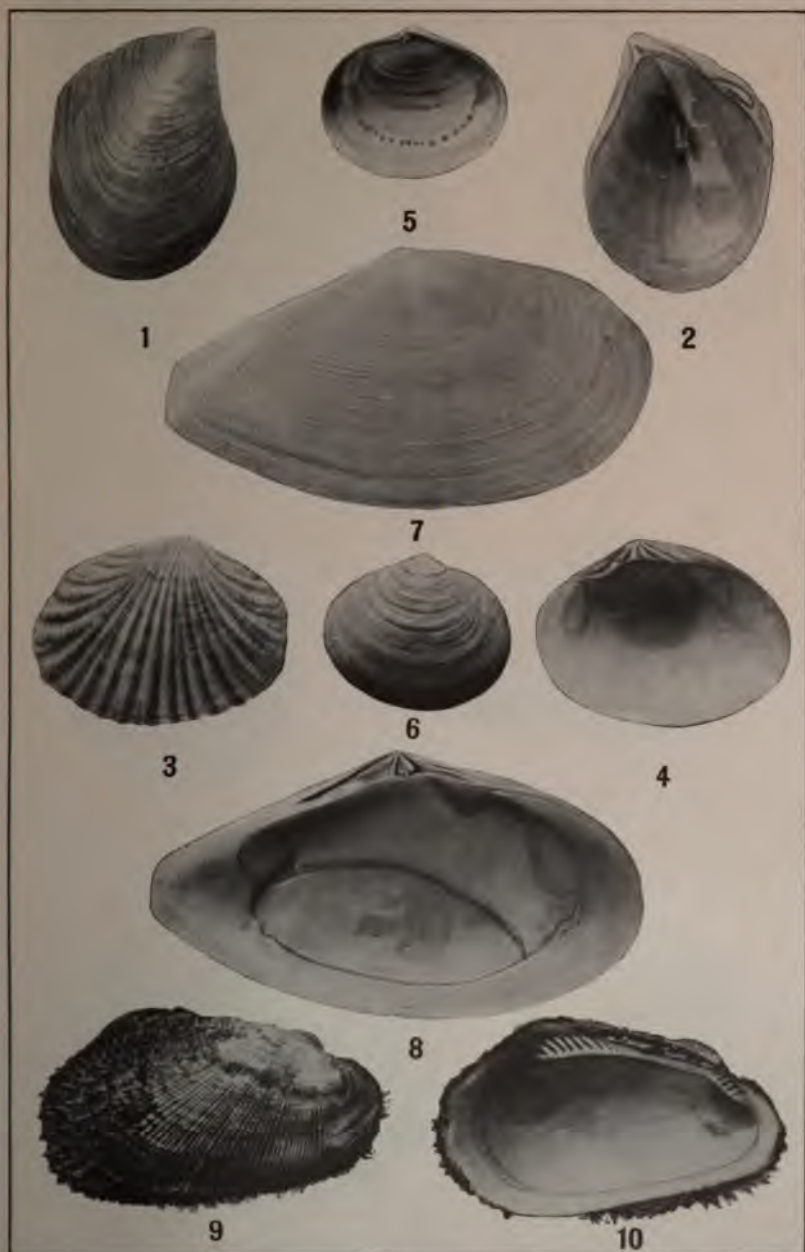




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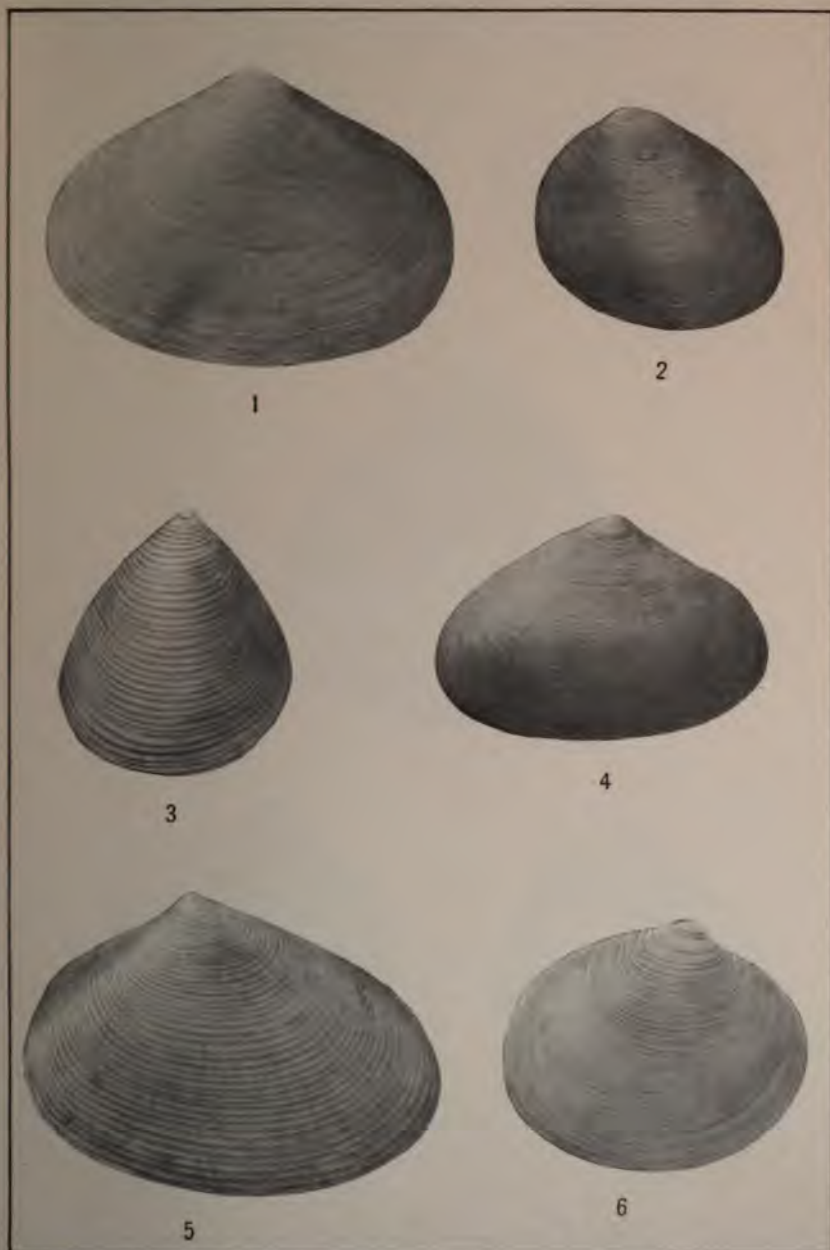




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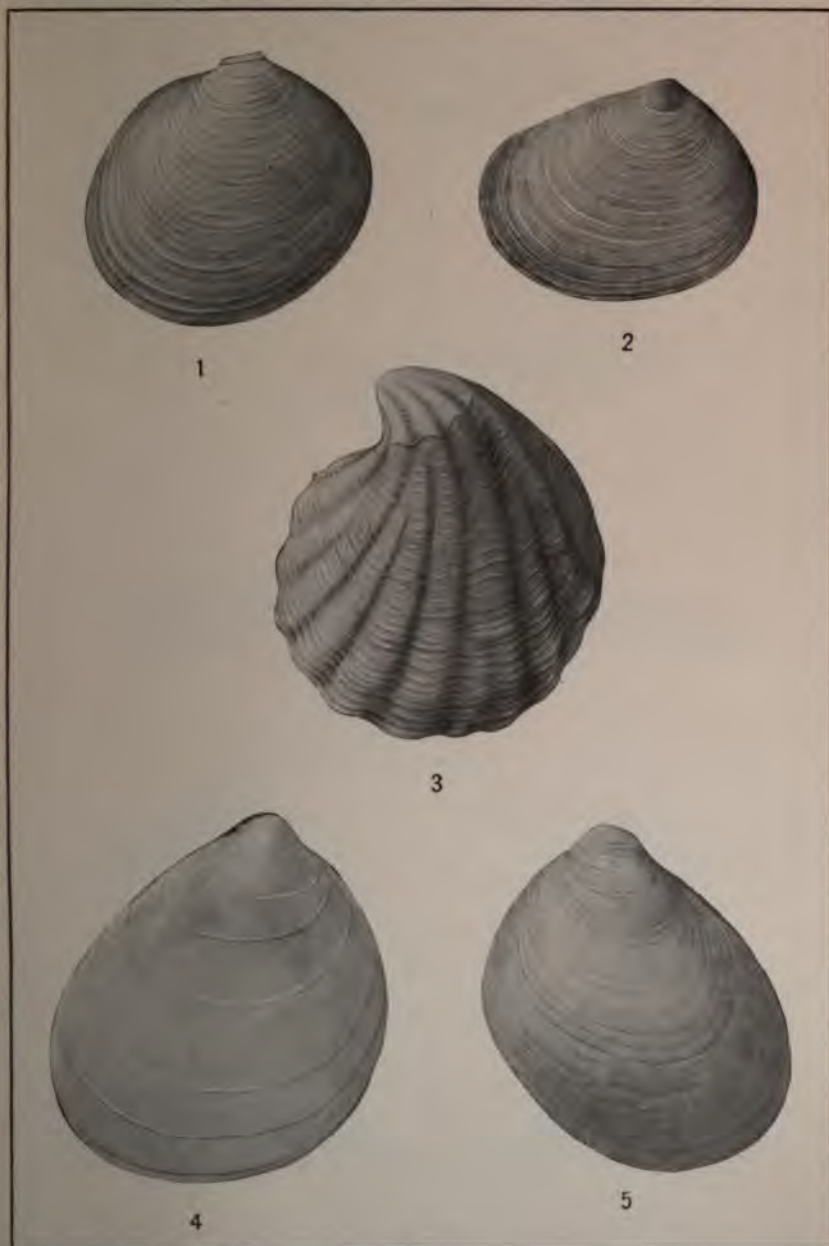




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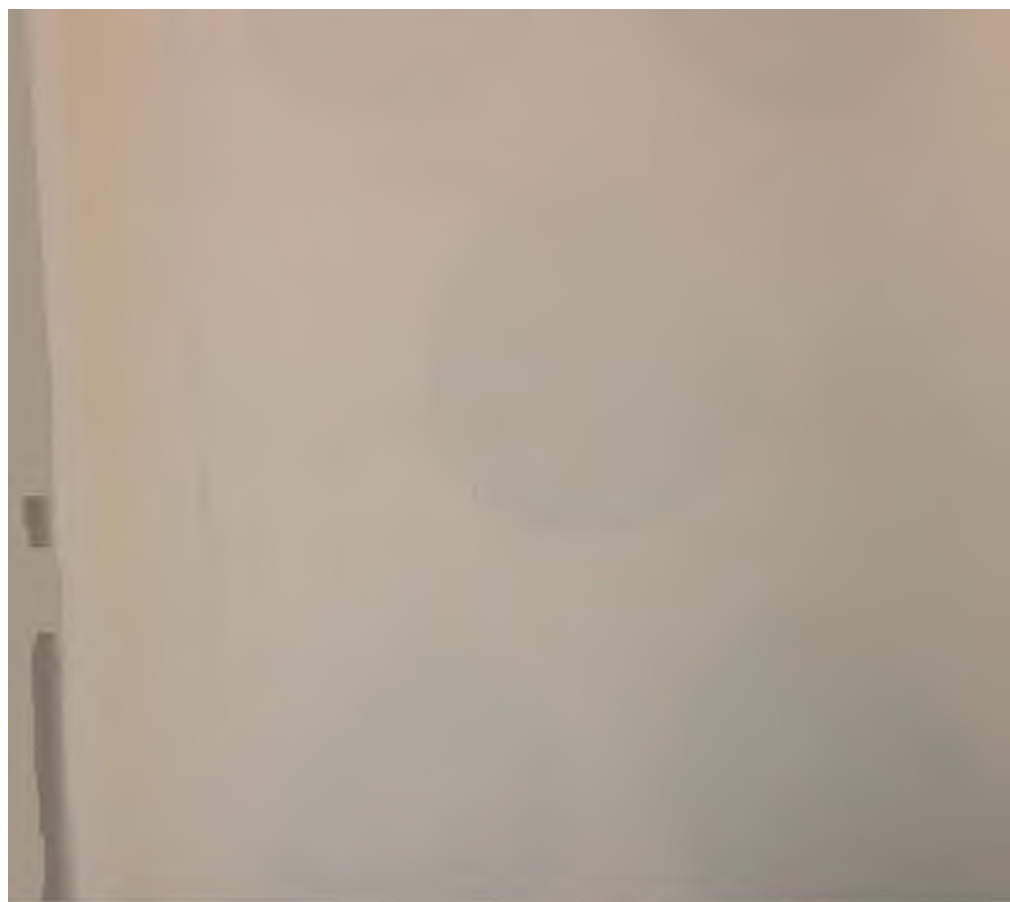
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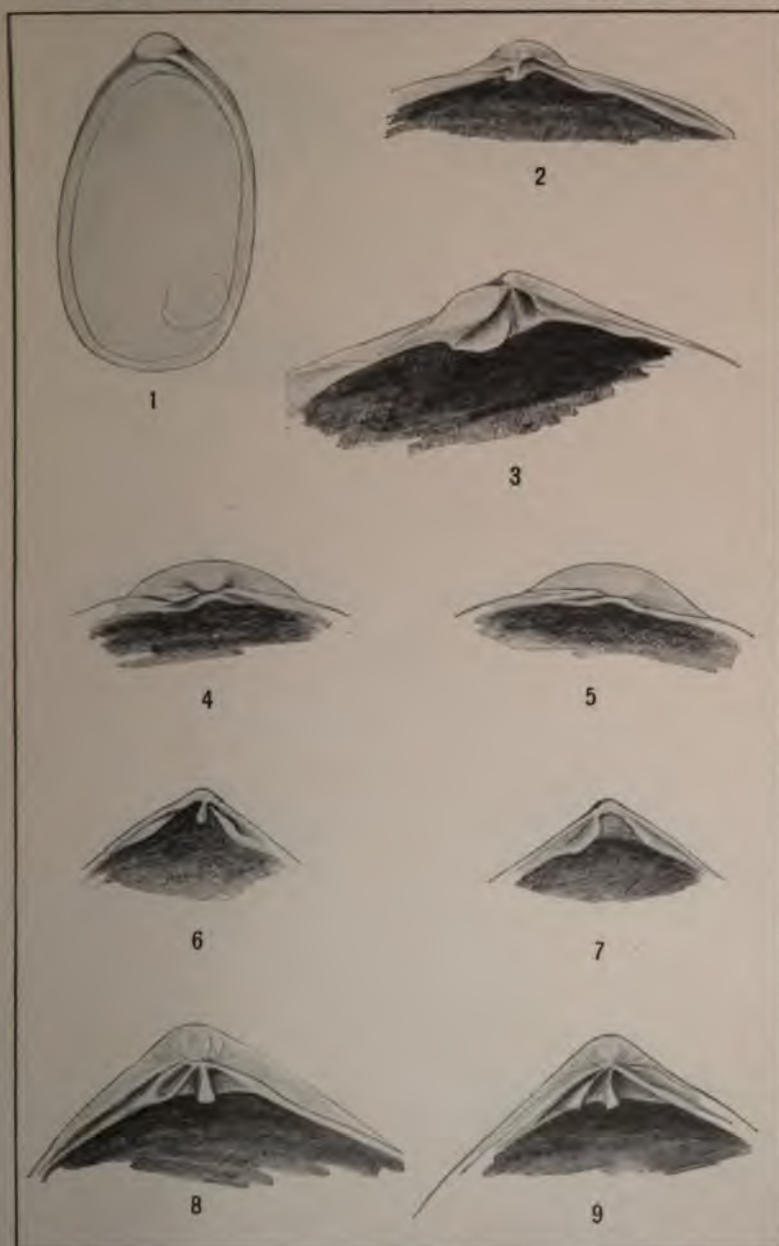




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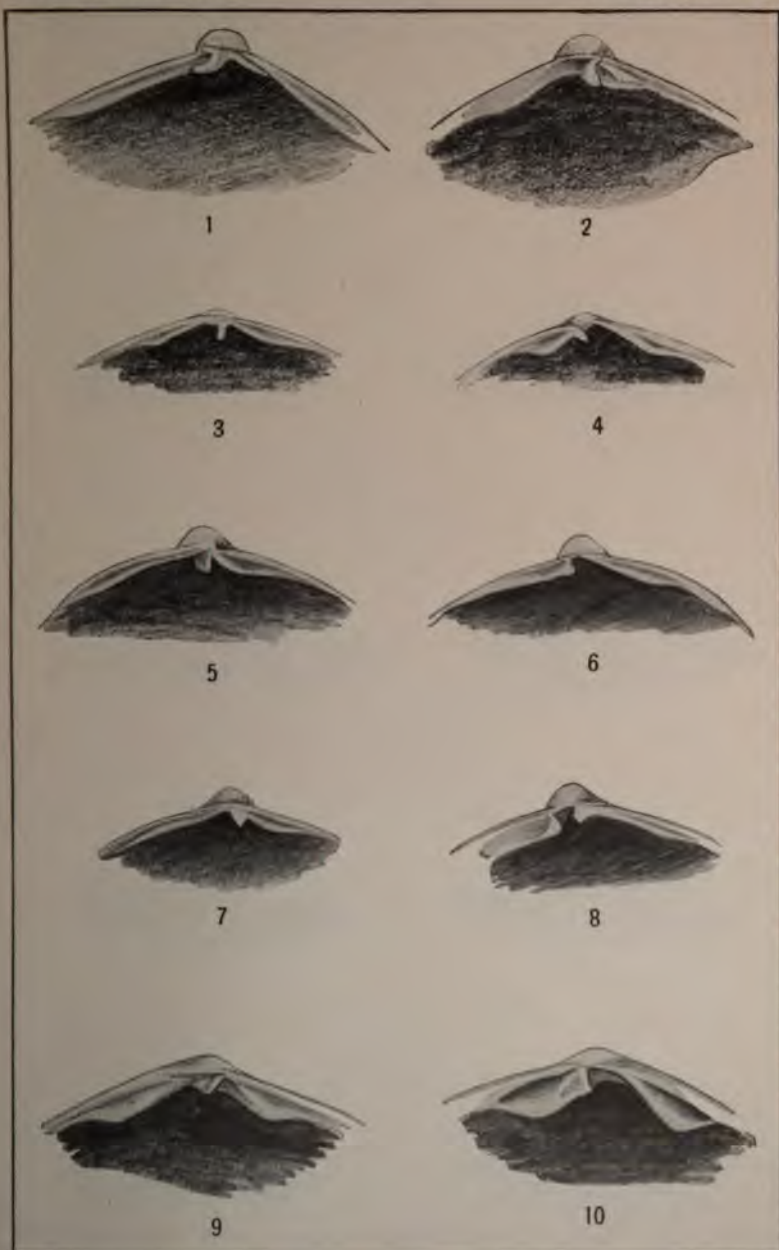
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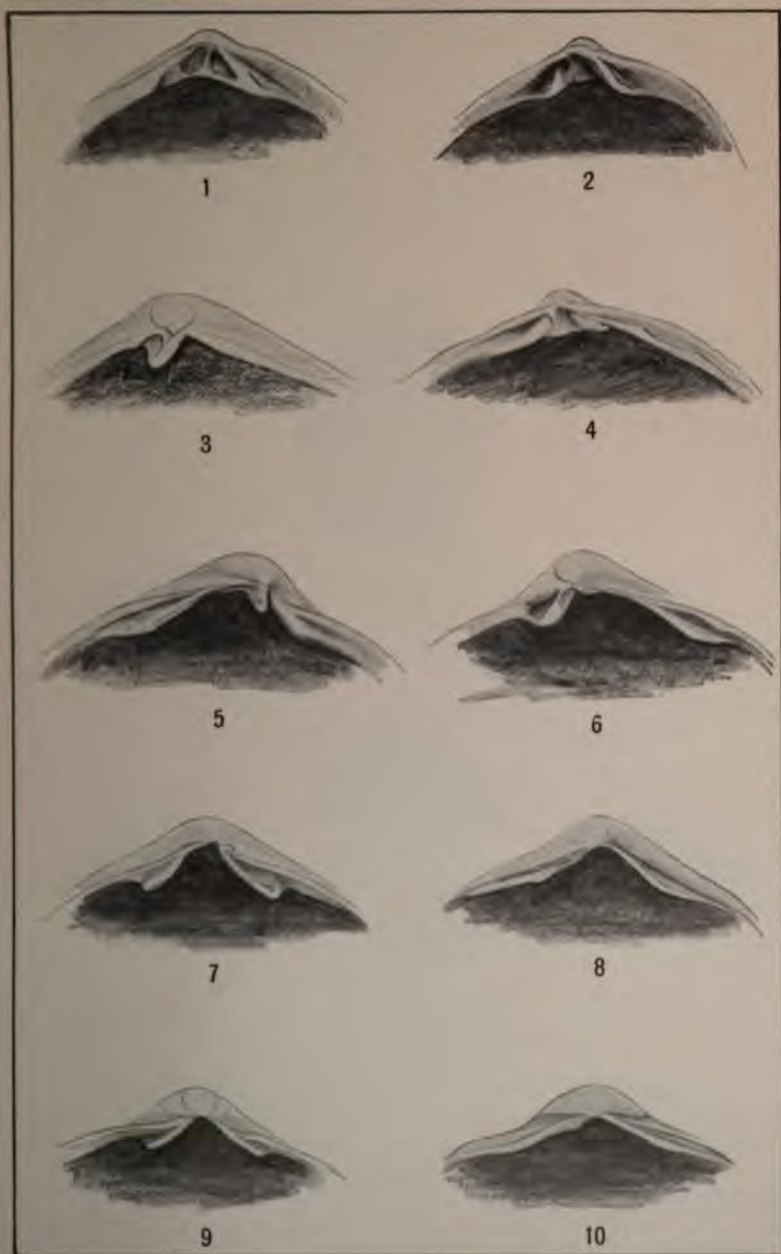
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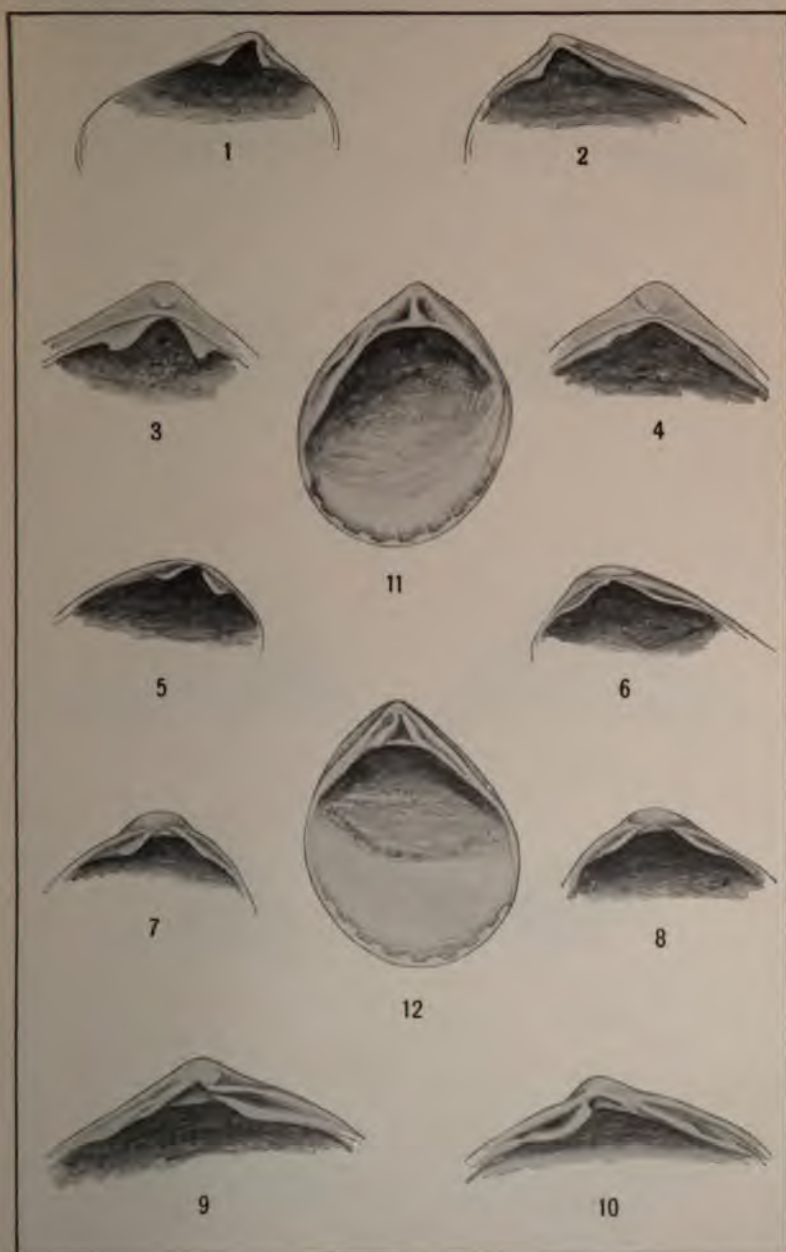




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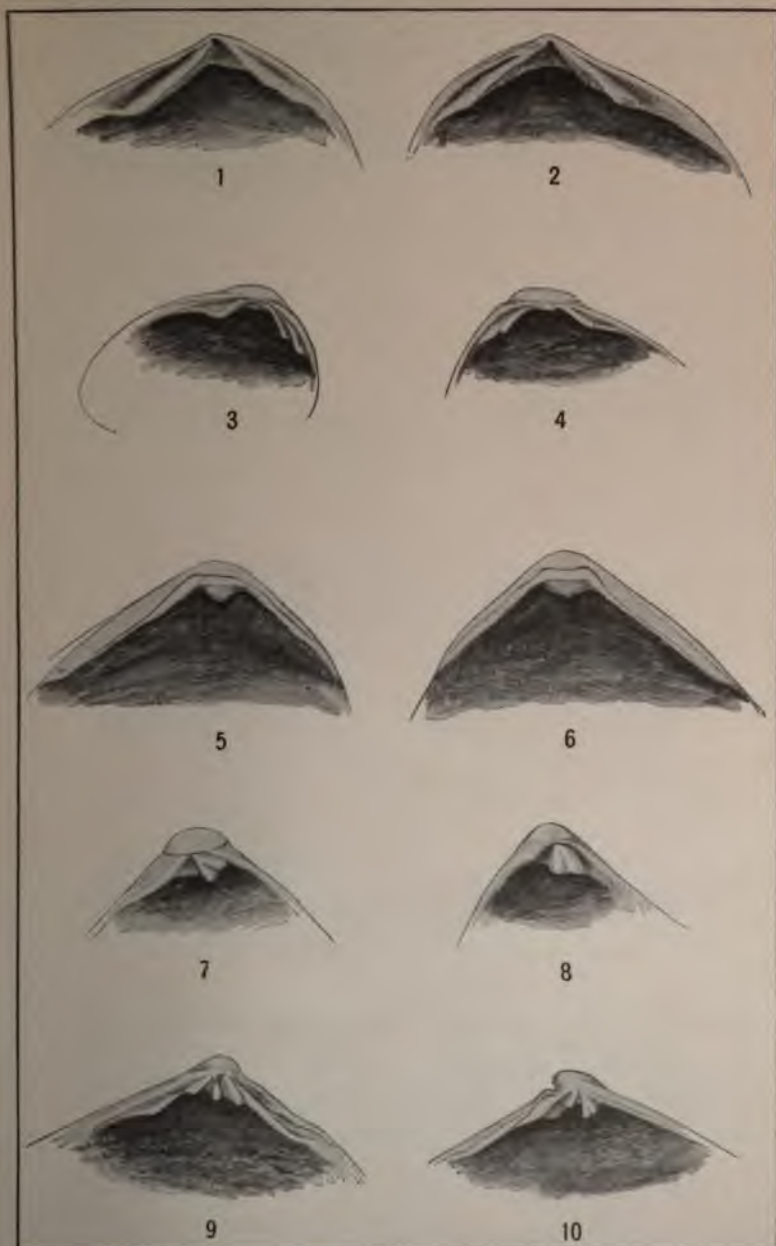




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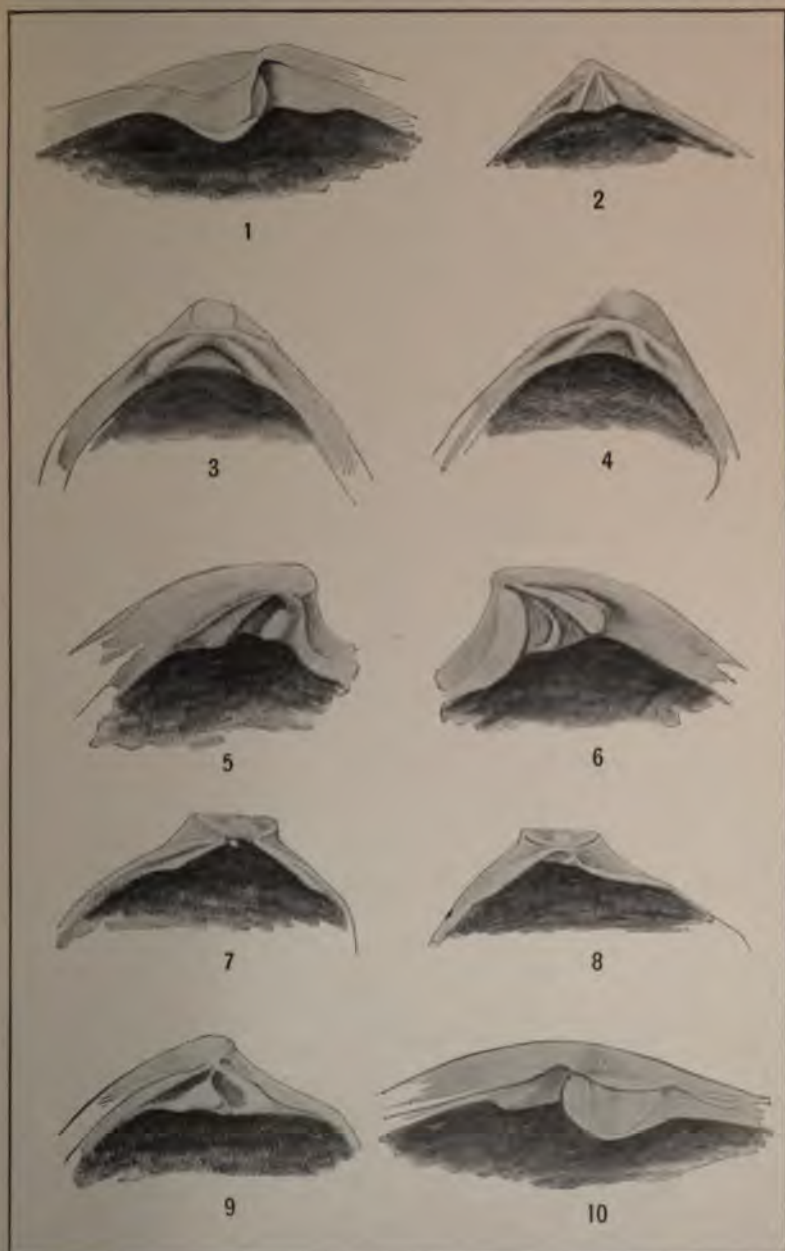




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